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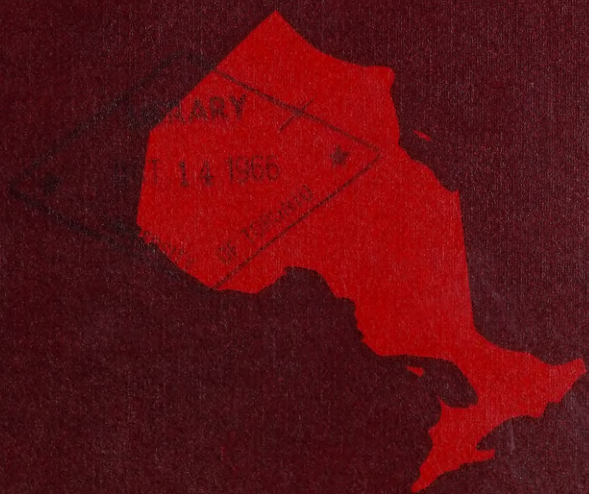
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Leonard E. Dudley. 1966.

THE ECONOMY OF ONTARIO



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THE ECONOMY OF ONTARIO

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OFFICE OF THE CHIEF ECONOMIST

ONTARIO, DEPARTMENT OF ECONOMICS AND DEVELOPMENT

Queen's Printer, Toronto, 1966

Preface

The preparation of this book was undertaken by the Ontario Department of Economics and Development for two purposes. First, it was felt that reference material relating directly to Ontario would make the teaching of economics in Ontario secondary schools more meaningful for the students. Second, the Department of Economics and Development required a publication of this type to answer some of the more serious enquiries it receives on the structure and function of the Ontario economy.

The general approach of the book is descriptive rather than theoretical. That is, it seeks to give the reader a knowledge and appreciation of the forces determining the pattern and pace of economic activity in Ontario without introducing him to the body of economic laws or theories commonly used to rationalize these forces. An attempt has been made to keep the degree of complexity at the level of the grade 12 student who would at the same time be using a textbook explaining simple basic economic theory.

The first draft of this book was prepared by Leonard E. Dudley, who worked in the Department of Economics and Development in the summer of 1965 between his third and fourth years of the political science and economics course at the University of Toronto. Subsequent revisions and editing were carried out during the winter and spring of 1966. The cost of printing the book was shared equally by the Department of Economics and Development and the Department of Education.

Office of the Chief Economist

DEPARTMENT OF ECONOMICS AND DEVELOPMENT

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Introduction

The two decades since 1945 have been a period of dramatic expansion and vitality for Ontario—a period in which the province has played a major role in Canada's economic growth. Canada is made up of a number of distinct and separate geographic regions, stretching in a chain across the North American continent. Ontario straddles two of these regions, the St. Lawrence Lowlands and the Canadian Shield, and is in many ways the key to the Canadian economy.

The past twenty years have seen striking changes in the social and economic activities which occupy the lives of Ontario residents, whether they live and work in the northern plateaus and forests or in the populous southern part of the province. New resources have been developed and old resources more intensively exploited. New industries have been founded and old industries drastically reshaped. New towns have been built and existing cities expanded into thriving metropolitan centres. These have indeed been years of excitement. It is the purpose of this booklet to outline some of the economic factors underlying these changes and then briefly to glance at the prospects for future growth.

In chapter 1, the Ontario economy will be placed in perspective, first in a national setting and then in an international one. This will be done largely by the use of statistics. Of course, the statistics used for such broad analysis do not reveal the factors underlying the growth of the Ontario economy. The explanation must be sought, on the one hand, in the characteristics of demand for the goods and services Ontario is able to produce, and, on the other hand, in Ontario's ability to meet this demand. Chapter 2 will be devoted to the characteristics of demand. The conditions of supply—the available resources and the use of these resources—will be examined in chapters 3 and 4. Finally, chapter 5 will consider generally the prospects for continued economic growth and some of the problems likely to be encountered.

MAP 1
ONTARIO'S METROPOLITAN AREAS



1/The Ontario economy in perspective

AN OVERVIEW: Ontario, which covers 413,000 square miles near the heart of the North American continent, is the second largest of Canada's ten provinces. Economically, it is Canada's most important province. Ontario's close to 7,000,000 people make up slightly more than a third of Canada's total population. The productivity of its industries enables the province to produce 40 per cent of Canada's net value of commodities. It is not surprising then, that the personal income of Ontario residents is 40 per cent of that of the Canadian people as a whole. In other words, Ontario residents earn a higher share of the national income than their numbers would indicate.

Among the chief factors accounting for the economic growth of the province have been its geographic location and its natural resources. Ontario is not only close to the major North American population centres but it has an outlet to the Atlantic Ocean via the St. Lawrence Seaway, which means it has access to both continental and world markets. A key location makes it economically feasible for full use to be made of the province's rich resources. With its minerals, forests, rich farmland, and water resources, Ontario has a natural advantage in many areas of economic activity. More than a quarter of the value of Canadian mineral production is contributed by Ontario, and a similar proportion of Canada's agricultural production.

It is in manufacturing, however, that Ontario has the biggest advantage over most of the other provinces. A third of the manufacturing establishments in Canada are located within the province's boundaries. These firms in 1964 were responsible for 50.3 per cent of the nation's total shipments of manufactured goods. Clearly, Ontario is a leading manufacturing province in Canada.

Before proceeding, it might be interesting to note the most important centres of population in the province. A glance at the map on the facing page will show that most of the principal cities are in the southern part of Ontario, close to the border of the United States. The largest is Toronto, the capital of Ontario and Canada's second largest city.

TABLE 1
POPULATION OF LEADING METROPOLITAN AREAS IN ONTARIO, 1961

1. Toronto	1,824,000
2. Ottawa	430,000
3. Hamilton	395,000
4. Windsor	193,000
5. London	181,000
6. Kitchener	155,000
7. Sudbury	111,000
8. Fort William-Port Arthur	90,000
9. St. Catharines	84,000
10. Oshawa	62,000
11. Kingston	54,000
12. Sault Ste. Marie	43,000
total	3,622,000

SOURCE: Canada, Dominion Bureau of Statistics, *Census of Canada 1961*, Bulletin 1.1-6.

As Table 1 shows, the Toronto metropolitan area had a population of 1,824,000 in 1961. Together, the twelve leading population centres shown in the table had 58 per cent of the province's population of 6,236,000 in that year.

TRENDS IN ECONOMIC DEVELOPMENT: It is possible to arrive at some conception of the level of development of the Ontario economy by comparing it with the Canadian economy as a whole and with the economies of other countries. One accepted measure of economic development is the percentage of the population living in urban areas. A high percentage of urban residents usually means a high level of economic development. As an economy develops, the population tends more and more to move to cities and towns. Table 2 shows the changes in rural and urban concentration in Ontario and Canada in this century.

Today, Ontario is the most highly urbanized of Canada's provinces. In 1901 the province was mainly rural in character, with only 40.3 per cent of the population living in urban areas. By 1961 almost 80 per cent of Ontario's residents lived in urban areas. In Canada as a whole, 34.8 per cent of the population was urban in 1901. This had risen to about 70 per cent by 1961.

Urbanization, of course, is but a reflection of changes in the occupational structure. As an economy develops, a shift takes place from primary industries such as agriculture to secondary industries

such as manufacturing and to tertiary industries such as community and personal services. Thus, another indicator (in reverse) of economic development is the percentage of the labour force engaged in agriculture and other primary industries.

TABLE 2
DISTRIBUTION OF POPULATION IN RURAL AND URBAN AREAS, 1901-1961

	Canada		Ontario	
	rural	urban	rural	urban
1901	65.2%	34.8%	59.7%	40.3%
1911	58.3	41.7	50.5	49.5
1921	54.7	45.3	44.4	55.6
1931	50.3	49.7	41.3	58.7
1941	49.1	50.9	40.1	59.9
1951	46.4	53.6	41.5	58.5
1961	28.9	71.1	20.8	79.2

SOURCE: Canada, Dominion Bureau of Statistics, *Census of Canada 1961*, Bulletin 7.1-2.

As Table 3 indicates, in 1921 over 29 per cent of the Ontario labour force was engaged in agriculture and other primary industries. By 1961, however, this percentage had fallen sharply to less than 10 per cent. By this measure the Ontario economy is again somewhat more highly developed than the Canadian economy as a whole. In 1961, over 14 per cent of the Canadian labour force was occupied in primary industries.

TABLE 3
PERCENTAGE OF THE LABOUR FORCE IN AGRICULTURE, FORESTRY, FISHING, TRAPPING, AND MINING, 1921-1961

	Canada	Ontario
1921	38.30%	29.38%
1931	34.53	26.09
1941	31.80	22.45
1951	21.30	13.79
1961	14.37	9.89

SOURCE: Canada, Dominion Bureau of Statistics, *Census of Canada 1921, 1931, 1941, 1951, 1961*.

As a result of the province's economic development, Ontario residents have enjoyed rapidly rising levels of income. In the postwar period, from 1946 to 1964, per capita personal income in Ontario increased by 134 per cent—a rate slightly higher than the 130 per cent increase in personal income for Canada as a whole, as shown in Table 4. Personal income *per capita*, or income per person, is calculated by dividing total personal income by total population. Other per capita figures, such as expenditure per capita, for instance, are computed in a similar manner.

TABLE 4
PERSONAL INCOME PER CAPITA, ONTARIO AND CANADA, 1946-1964

	Canada	Ontario
1946	\$ 791	\$ 913
1951	1,130	1,325
1956	1,361	1,594
1961	1,562	1,842
1964	1,823	2,137
per cent change, 1946-1964	130%	134%

SOURCE: Province of Ontario, Department of Economics and Development, *Ontario Statistical Review for 1965*.

Note that in every year the personal income of Ontario residents was well above the average for Canada. At the 1964 level of \$2,137, personal income in Ontario was 17 per cent higher than the average personal income in Canada, higher than in any other province.

INTERNATIONAL COMPARISONS: The term *gross national product* means the sum of the goods and services produced in an economy. Because of problems in defining exactly what goods and services are to be included in this total, gross national product per capita is only a very rough measure of how well off people are in different countries. Nevertheless, it is still a useful indicator of economic development. Table 5 indicates that, in terms of this measure, Canada at \$2,310 was second only to the United States in 1963. Ontario, with a per capita gross provincial product of \$2,650, was well in advance of Sweden, Canada's closest competitor. The figures in column 1 are given in Canadian dollars. To obtain the ratings in column 2 the Canadian gross national product is taken as 100; in other words, if Canada at \$2,310 is rated as 100, then Ontario at \$2,650 is rated as 115.

TABLE 5
GROSS NATIONAL PRODUCT PER CAPITA, SELECTED COUNTRIES, AND
GROSS PROVINCIAL PRODUCT PER CAPITA, ONTARIO, 1963

	(\$ Canadian)	(Canada = 100)
United States	3,320	144
Ontario	2,650	115
Canada	2,310	100
Sweden	2,200	95
West Germany	1,850	80
France	1,810	78
United Kingdom	1,650	72
Belgium	1,610	70
Netherlands	1,180	51
Italy	970	42
Japan	670	29
India (1962)	72	3

SOURCE: United Nations, Office of Statistics, *Monthly Bulletin of Statistics* (May, 1965) pp. 4-6, 168-9, 172-3.

2/Ontario's markets

One of the facts of life in an industrialized world is that no country or region can possibly be economically self-sufficient. It must import the raw materials, foodstuffs, and finished products which it cannot produce or which it could produce only at high cost. In order to pay for these imports, it must in turn sell its products in markets beyond its borders. It follows, then, that economic growth depends to a great extent on exports.

As will be shown, however, the growth of the domestic market can also stimulate economic growth. To the extent that it is possible to supply this market efficiently, the volume of imports may be reduced.

INTERNATIONAL MARKETS: Canada is one of the world's great trading nations, exporting each year over 20 per cent of its gross national product. Within this national economy, Ontario's place is sometimes described as that of a supplier of manufactured goods for the exporting areas. While such a description is correct as far as it goes, it tends to overlook the fact that Ontario is itself a major exporter, accounting for a large percentage of Canada's annual exports.

Although no records are available on Canadian exports by province of origin, it is possible nevertheless to indicate some of Ontario's leading export commodities. The sixteen commodities in Table 6 were selected from Canada's thirty leading exports in 1962. Each of the commodities listed is an important product of Ontario industry.

A glance at this list reveals a number of interesting points. Only three of the sixteen commodities—radioactive ores, iron ore, and tobacco—are exported as primary products, that is, in their raw state. It is in the second group, products of secondary industry, that the export products most important in terms of value are to be found. Nickel, copper, and pulp and paper are the leading commodities in this group. These exports are only "partly" manufactured—in the sense that a sheet of copper, for example, requires still further processing before it can be used by man. However,

Ontario is an exporter of large quantities of "fully" manufactured products, such as industrial machinery and agricultural implements. Here the economic maturity of the province becomes apparent. As the Ontario economy develops further, fully manufactured exports should become increasingly important.

TABLE 6
SOME LEADING EXPORTS OF ONTARIO

<i>raw materials</i>	}	GROUP I—PRIMARY
radioactive ores and concentrates		
iron ore and concentrates		
tobacco		
(a) <i>partly manufactured</i>	}	GROUP II—SECONDARY
nickel and products		
newsprint paper		
wood pulp		
copper and products		
synthetic rubber and plastic materials		
chemicals, organic and inorganic		
plates, sheet and strip		
pigs, ingots, blooms, and billets		
(b) <i>fully manufactured</i>	}	
machinery (non-farm) and parts		
farm implements and machinery and parts		
electrical apparatus		
aircraft and parts		
whisky		

SOURCE: These commodities were selected from the table, "Leading Domestic Exports, 1962," *Canada Year Book 1963-1964*, p. 925. Commodities within each group are listed in approximate order of importance by value.

The most important foreign market for Ontario, as for the rest of Canada, is the United States, which in 1962 accounted for 58 per cent of Canada's exports. In the eight American states bordering on the Great Lakes, Ontario has a potential market of over 70,000,000 people.

Radioactive ores and concentrates are the most important primary commodities, or raw materials, exported from Canada to the United States. Pulp and paper, and nickel and nickel alloys are the leading secondary products exported. Exports of fully manufactured products—particularly agricultural implements and automobiles and parts, on which tariffs between the two countries have been or are being eliminated—are increasing rapidly.

Ontario's second largest foreign market is Great Britain. In 1962, Britain accounted for 15 per cent of Canada's exports. Agricultural products such as tobacco and oilseed cake and meal, along with nickel ore and concentrates, are the leading exports. All are in the primary group. Although manufactured goods are less important as exports to this market than to the United States, Britain purchases partly manufactured goods such as copper and newsprint in large quantities. Some leading exports to these two markets are compared in Table 7.

TABLE 7
SOME LEADING EXPORTS OF ONTARIO TO THE UNITED STATES AND
GREAT BRITAIN

	<i>United States</i>	<i>Great Britain</i>
GROUP I		
raw materials	radioactive ores	nickel ore, concentrates tobacco oilseed cake and meal
GROUP II		
partly manufactured commodities	newsprint paper nickel and alloys wood pulp	copper and alloys newsprint
fully manufactured commodities	agricultural machinery (except tractors)	

SOURCE: These commodities were selected from the table, "Domestic Exports from Canada, 1962," *Canada Year Book 1963-1964*, p. 927.

In order of importance, Canada's other customers include Japan, West Germany, China, Australia, the Netherlands, Italy, Norway, Belgium, and Luxembourg. With the exception of Communist China which purchases chiefly wheat and barley not grown in Ontario, all of these countries, particularly West Germany and Australia, import some of Ontario's manufactured products. However, their largest purchases are of products such as wheat, lumber, aluminum, and asbestos, which are produced mainly in the other provinces.

THE NATIONAL MARKET: When Ontario, Quebec, New Brunswick, and Nova Scotia came together in Confederation in 1867, one of their main objectives was to form a national economic union.

Interprovincial trade barriers were accordingly abolished, and a national tariff was established, joining these and the provinces which later joined Confederation in a common market across the continent.

Confederation has had important economic consequences for Canada, and for Ontario. As the tariff, which has remained a feature of the "economic union," applies mainly to manufactured goods, it has encouraged the establishment in Canada of firms manufacturing products needed in this country which would otherwise be imported. But even in the absence of the tariff, Ontario, because of its central location and abundant resources, has a comparative advantage over the other provinces in manufacturing. Consequently, manufacturing firms have tended to locate in Ontario.

Air, water, and land transport give Ontario producers excellent access to the rest of Canada. Unfortunately, no statistics are kept for interprovincial trade. However, it is possible to obtain an indication of the nature of Ontario's "exports" to other provinces by examining Ontario's share of Canadian production in various industries. This is easy to do by comparing the figures for the net value of production in certain industries with the total Canadian net value of production in that industry, as is done in Table 8. Net value of production is calculated by deducting the cost of materials, fuel, and electricity from the total value of production and is often called "value added."

TABLE 8
NET VALUE OF PRODUCTION, SELECTED INDUSTRIES, 1961

	Ontario (\$ million)	Ontario as a % of Canada
motor vehicles	265	97
motor vehicle parts and accessories	156	94
office and store machinery	45	92
electrical industrial equipment	117	90
soap and cleaning compounds	78	90
agricultural implements	52	87
iron and steel	354	86

SOURCE: Canada, Dominion Bureau of Statistics, *Manufacturing Industries of Canada 1961*.

In 1961, Ontario accounted for 97 per cent of the total net value of production of motor vehicles in Canada. Obviously a large percentage of the automobiles produced were "exported" to the

other provinces. The list includes six other industries in which Ontario accounted for over 85 per cent of Canadian net value of production in 1961. It should be noted that, with the exception of the iron and steel industry, all of the industries listed in Table 8 produce fully manufactured end products. Thus the national market is different in character from the international market, for which much of Ontario's exports are in the raw state.

The national market has grown rapidly since the Second World War, and now consists of more than 19,000,000 people. Over a period of 15 years, from 1949 to 1964, population increased at an average rate of 2.42 per cent per year. During this same period, per capita personal disposable income increased at 4.24 per cent per year. Although prices rose by 2.04 per cent annually, "real" per capita disposable income still rose by the difference between these two rates—over 2 per cent annually.

TABLE 9
THE DOMESTIC MARKET

(a) the national market, including Ontario (1964)		average annual compound growth rate, 1949-1964
population (June 1, 1964)	19.237 million	2.42%
personal disposable income		
total	\$31.612 billion	6.76
per capita	\$1,643	4.24
retail sales		
total	\$20.068 billion	5.82
per capita	\$1,043	3.32
consumer price index (1949 = 100)	135.4	2.04
(b) the Ontario market (1964)		average annual compound growth rate, 1949-1964
population (June 1, 1964)	6.586 million	2.76%
personal disposable income		
total	\$12.423 billion	6.91
per capita	\$1,886	4.04
retail sales		
total	\$7.367 billion	5.51
per capita	\$1,119	2.68
consumer price index (1949 = 100)	135.4	2.04

SOURCE: Canada, Dominion Bureau of Statistics, *Retail Trade, January 1966* and *Canadian Statistical Review, December 1965*; Province of Ontario, Department of Economics and Development, *Ontario Statistical Review for 1965*.

THE ONTARIO MARKET: This discussion of markets has so far stressed the markets beyond the province's borders, to which it "exports" the products of its industries. It should be realized, however, that Ontario, with close to 7,000,000 residents, is becoming an increasingly important market for its own producers. The consumption of Ontario products by Ontario consumers has been a strong stimulus to the growth of the provincial economy. As Table 9 indicates, per capita disposable income and retail sales levels are significantly higher for Ontario than for Canada as a whole. In terms of population and personal disposable income, the Ontario market has been growing at a considerably more rapid pace than has that of Canada as a whole.

The success of Ontario's products in international, national, and provincial markets has been a driving force behind the province's economic growth. For an explanation of how Ontario producers have managed to meet the demand in these markets, it is now necessary to turn to a discussion of the province's basic resources.

3/The basic resources

It was shown in the last chapter that Ontario's economic growth can be interpreted in terms of the success of its products in the various markets of the world. It is only because the economy has been able to adjust to the demand from these markets that long-term growth has been possible. How then does this adjustment take place? As will become clear in this section, the underlying explanation for Ontario's economic growth has been the province's flexibility in exploiting its resources—in developing new resources and in transferring already developed resources to their most productive uses.

The term "resources" as used here includes natural resources, human resources, and capital—the three agents which are employed to form the final products. Each of these *factors of production* will be considered in turn.

A. Natural resources

Those factors of production that are supplied by nature are known as *natural resources*. Of course, a resource such as the water flowing over Niagara Falls was of no economic significance until a means was found of transforming its energy into electric power. The natural resources which are examined below are all resources that can be economically exploited.

AGRICULTURAL RESOURCES: One of the prerequisites for a dense industrial population is an adequate food supply. Consequently, there is a tendency in Canada, as in other countries, for large urban centres to be located in close proximity to fertile agricultural land such as that found in certain parts of Ontario.

Ontario has about one tenth of the occupied farmland in Canada. However, such farmlands cover only 8.4 per cent of the province's land area. In 1961 there were 18.6 million acres of occupied farmland, of which 12.0 million acres were improved, that is, under cultivation or used for pasture. This is only a very small part of

MAP 2
OCCUPIED FARMLAND IN ONTARIO



SOURCE: P. Camu, E. P. Weeks, and Z. W. Sametz, *Economic Geography of Canada* (Toronto, Macmillan, 1964) p. 163.

the province's land area. Every year the area occupied by farms decreases, as marginal lands are abandoned or urban centres spread into the surrounding countryside.

It is customary to divide Ontario into two regions, one north and the other south of a line following the Mattawa River, Lake Nipissing, and the French River. (This does not quite correspond with the southern boundary of the geographic region known as the Canadian or Laurentian Shield.) Only a small part of the province's agricultural land is in northern Ontario, even though this part of the province accounts for 80 per cent of the total land area. There are only 1.4 million acres of occupied farmland, 7.8 per cent of the provincial total, in the northern region. Because of the short growing season and the rocky terrain of the Canadian Shield, agriculture is limited to the clay belts, such as the area near Lake Timiskaming. Much of the farmland is devoted to oats and to grass for pasture.

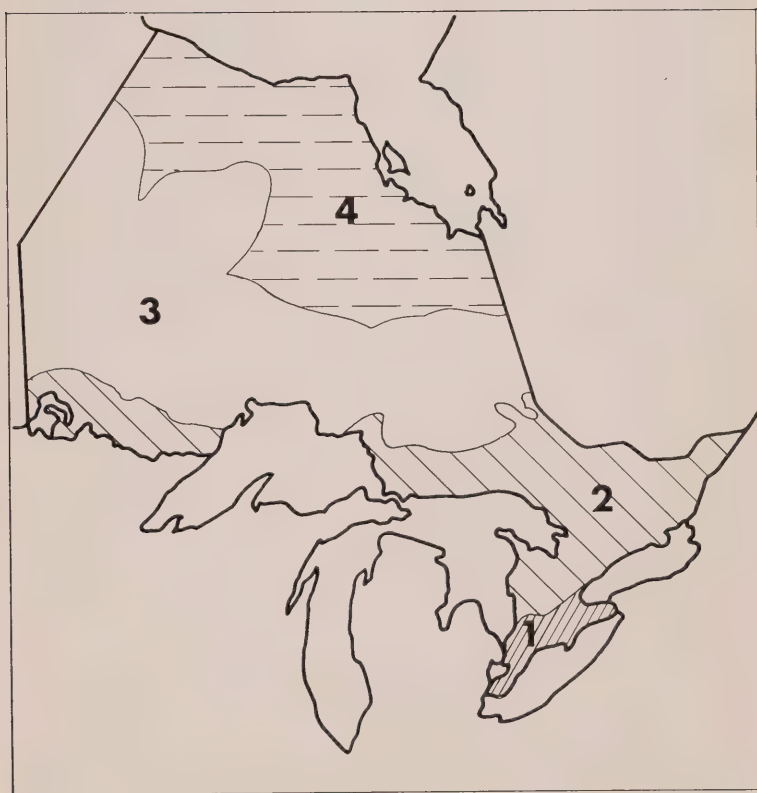
Southern Ontario has two large areas of dark gray and gray-brown podzolic soils which are suitable for farming. The larger of these areas is in the central and southwestern part of the province, on either side of the Niagara Escarpment. Because of its adequate rainfall and its long growing season, this is one of the best regions for agriculture in Canada. In addition to general farming, much land is devoted to dairy and livestock farming and to special crops such as fruit and tobacco.

The other main agricultural area of southern Ontario is in the valleys of the St. Lawrence and Ottawa Rivers. Although the land there is less suitable than that in southwestern Ontario, it is still adequate for general farming.

FOREST RESOURCES: Anyone who has seen Ontario from the air will agree that forests are one of the province's most prevalent resources. Three-quarters of Ontario's land area is covered by forests—167 million acres in all. When only those stands which are accessible and commercially valuable are considered, there are still 106 million acres of productive forest lands in the province. Ontario's forests contain about 85 billion cubic feet of commercially useful timber.

Of this timber, 60 per cent consists of softwoods, in stands which cover much of northern Ontario. In the accompanying map of Ontario's forest area, softwoods predominate in the northern forest region and grow throughout the Great Lakes-St. Lawrence region. Spruce, pine, and other conifers are the most prevalent types of trees, but birch and poplar are also found in quantity.

MAP 3
FOREST REGIONS OF ONTARIO



1. deciduous forest region
2. Great Lakes-St. Lawrence forest region
3. northern forest region (predominantly forest)
4. forest and barren region

SOURCE: Canada, Department of Mines and Technical Surveys, *Atlas of Canada 1957*.

The hardwoods, which make up about 40 per cent of Ontario's usable timber, are found mostly in southern Ontario, and in the southern part of the region west of Lake Superior. Hardwoods are the predominant trees in the deciduous forest region, but they are also found throughout the Great Lakes and St. Lawrence region. The most important species are maple, elm, basswood, and oak.

MINERAL RESOURCES: Ontario is Canada's leading mineral producer. The province has abundant deposits of a wide variety of minerals and fuels. At least fifteen metallic minerals, ten non-metallic minerals, various structural materials, and deposits of petroleum and natural gas are found in the province in sufficient quantity to be exploited commercially.

The most important mineral deposits are found in a broad belt of the Canadian Shield stretching from the Quebec border in the Timiskaming and Cochrane districts southwest to Blind River on Lake Huron. In the northern part of this belt, there are gold deposits in the Porcupine and Kirkland Lake areas. In 1964 a large strike of copper, zinc, and silver was made near Timmins. In the Haileybury and Cobalt area to the southeast, silver and cobalt are found. Near Sudbury, in the southern part of the belt, there are vast nickel and copper ore bodies. Finally, at Elliot Lake near Lake Huron is one of the world's largest fields of uranium, which was once and may again become extremely valuable.

The section of the Canadian Shield north and northwest of Lake Superior is also rich in mineral resources. Iron ore is found at Steep Rock in the west and at Michipicoten near the eastern shore of Lake Superior. Manitouwadge, to the northwest of Michipicoten, is the site of large copper and zinc deposits. Scattered across the region are gold deposits at Red Lake, Pickle Crow, Geraldton, and Renabie.

Canada's only magnesium is found near Renfrew, in southeastern Ontario, while Marmora is the site of large iron ore deposits. The uranium deposits near Bancroft are no longer being mined, but are ready to be re-activated when the world demand for uranium improves. In southwestern Ontario, there are deposits of salt at Goderich and in the Windsor area, as well as small fields of petroleum and natural gas.

WATER RESOURCES: Compared with many other parts of North America, Ontario has abundant water resources. In the Great Lakes, and in thousands of other lakes and rivers, the province has 68,490 square miles of water.

MAP 4
PRINCIPAL MINING REGIONS OF ONTARIO



Although few people are accustomed to attach a value to water, it is gradually being realized that this is one of the most precious of natural resources. In North America, a growing population is demanding water in ever-increasing quantities. Consequently, in recent decades, more attention has been paid to the conservation of water resources through such techniques as flood control and improved sewage treatment. In addition, more care is being taken in allocating water among its various uses in industry and agriculture, in the home, and for recreation.

One use of water which has been extremely important in Ontario's economic growth is the generation of electricity. Low-cost electric power is a prime requirement for most manufacturing industries. In particular, the smelting and refining and pulp and paper industries use large quantities of electricity. Cheap hydro-electric power has helped to compensate for comparatively small supplies of other fuels, such as coal, petroleum, and natural gas, in Ontario. Ontario is second only to Quebec in installed hydro-electric generating capacity. At the end of 1964 the generating capacity was 5.9 million kilowatts, which represented 29 per cent of the Canadian total.

The Niagara and St. Lawrence Rivers, the Ottawa River, and the numerous rivers of the Canadian Shield afford many sites which can be employed for the generation of electricity. As the accompanying map indicates, the largest hydro stations—the Sir Adam Beck complex and the Robert H. Saunders station—were built to harness the enormous flow of the St. Lawrence system. The Ottawa River, too, serves a number of large generating stations. Very recently, the development of techniques producing extra-high voltages has made it possible to transmit electricity efficiently over long distances. For example, power from sites on the Abitibi and Mattagami Rivers which flow into James Bay will soon be transmitted to users in southern Ontario at 500,000 kilovolts instead of the conventional 230,000 kilovolts.

Demand for electricity has increased so rapidly that most of the economically feasible hydro-electric sites are already in use. Any prospective new sites are so far from the centres of demand that it has become desirable to turn to thermal power. Most of the thermal stations, like the two in the Toronto area, use coal as a fuel. However, greater use is likely to be made of nuclear energy in future. With the successful operation of a small nuclear demonstration unit at Chalk River, the Hydro-Electric Power Commission of Ontario and Atomic Energy of Canada, Limited, have constructed a nuclear-thermal generating station at Douglas Point on

MAP 5
PRINCIPAL ELECTRIC GENERATING STATIONS IN ONTARIO



Note: The numbers following the names give total generator capacity in 1000-kilowatts'

- hydro
- thermal — coal
- thermal — nuclear power

SOURCE: Canada, Department of Northern Affairs and National Resources, *Electric Power in Canada 1964*.

Lake Huron. A third nuclear-thermal generating station is being built at Pickering, a few miles east of Toronto, and is expected to be in use by 1970.

At the end of 1964, Ontario's installed thermal generating capacity (both coal and nuclear) was 2.9 million kilowatts—33 per cent of Ontario's total installed electric generating capacity. Since water is used as a cooling agent, thermal stations must be built close to a large water supply. Thus, water resources remain important, even for thermally generated power.

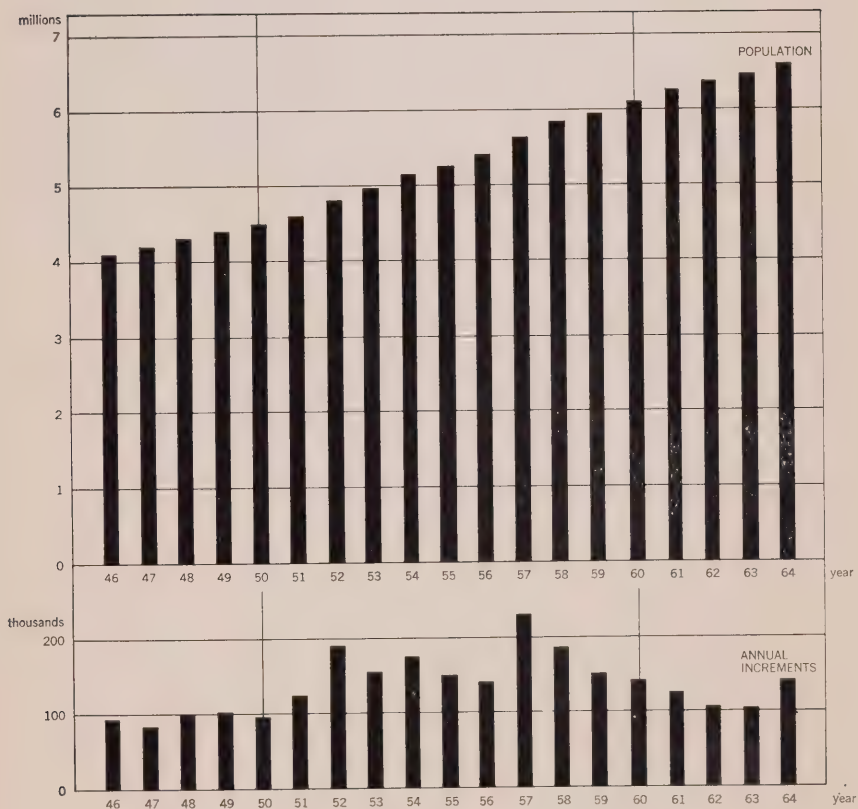
B. Human resources

In discussing factors of production, it was once common to group human agents together simply under the heading of "labour." However, physical effort is becoming less and less important as a part of man's total contribution to the production process, so "human resources" seems a more appropriate term today. Human resources may be defined broadly enough to include managerial, scientific, and technical abilities as well as physical skills. Despite the replacement of labour by machines in many industries, human resources continue to be essential, both as a *means* of production and as an *end* of the production process—the members of the labour force and their families are also consumers of finished goods and services.

A number of aspects of human resources have already been touched upon in earlier sections. In chapter 1 it was shown that the Ontario population is becoming increasingly urbanized and that a declining percentage of the labour force is employed in primary industries. In chapter 2 it was stated that the province's population grew at an average rate of 2.7 per cent from 1949 to 1964. The first part of this section will be devoted to a fuller discussion of Ontario's human resources, including population growth and age distribution. Later, the labour force will be examined as a means of production.

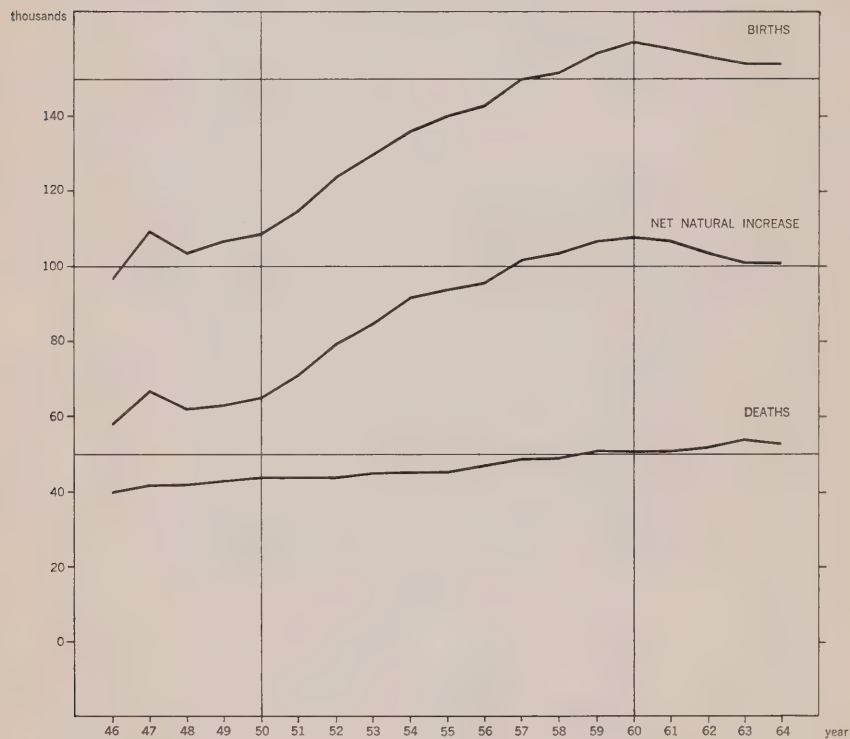
POPULATION: The postwar years have been a period of rapid population growth for Ontario. From 1946 to 1964 the province's population grew by over 60 per cent, from 4.093 million to 6.586 million, as Figure 1 illustrates. The accompanying graph of annual increments shows that the period of most rapid growth occurred from 1951 to 1957, with the greatest increase taking place between June 1, 1956, and June 1, 1957, when the population grew by

FIGURE 1
POPULATION OF ONTARIO AND ANNUAL INCREMENTS, 1946-1964



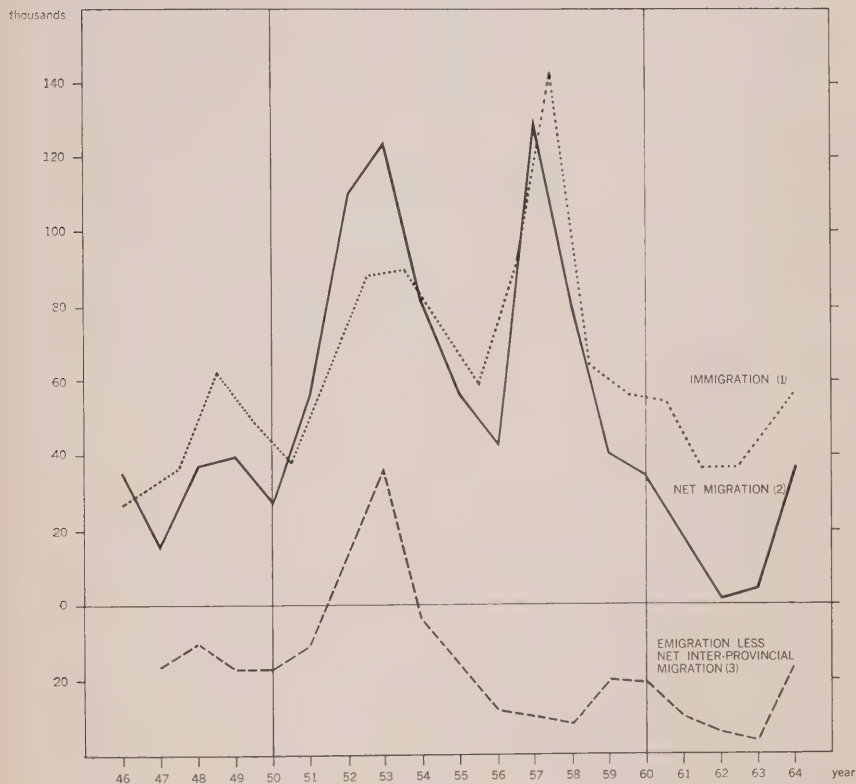
SOURCE: Canada, Dominion Bureau of Statistics, *Vital Statistics*; Province of Ontario, Department of Economics and Development, *Ontario Statistical Review for 1965*.

FIGURE 2
BIRTHS, DEATHS, AND NATURAL INCREASE FOR ONTARIO, 1946-1964



SOURCE: Canada, Dominion Bureau of Statistics, *Vital Statistics*; Province of Ontario, Department of Economics and Development, *Ontario Statistical Review for 1965*.

FIGURE 3
NET MIGRATION IN ONTARIO, 1946-1964



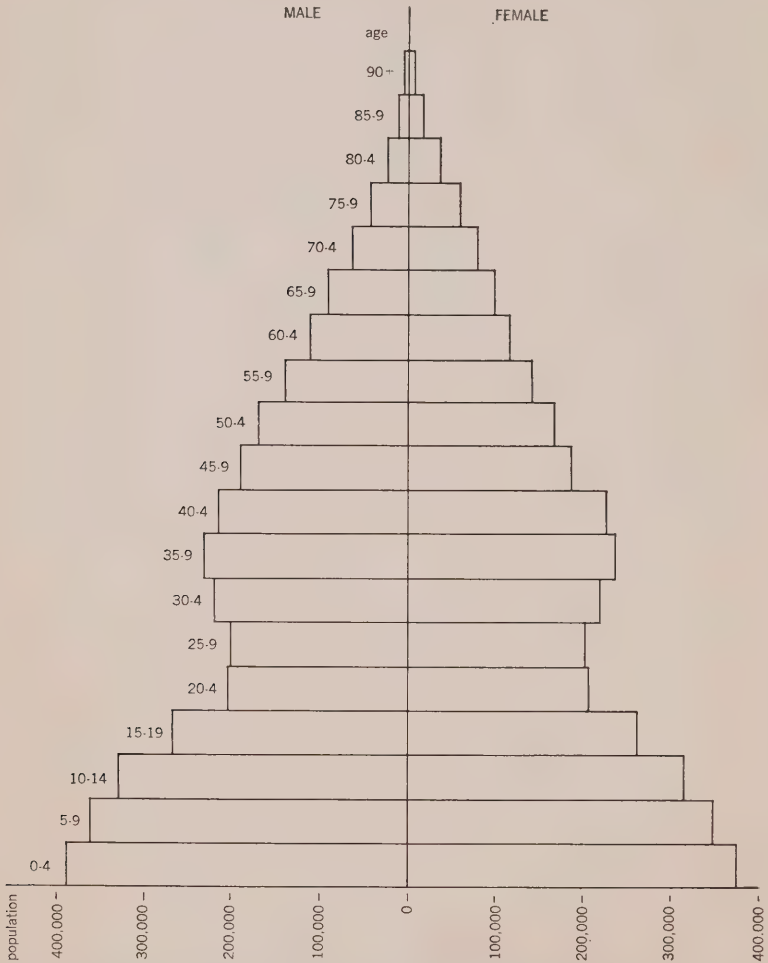
1) January 1 to December 31.

2) June 1 to June 1.

3) June 1 to June 1.

SOURCE: Canada, Dominion Bureau of Statistics, *Vital Statistics*; Department of Citizenship and Immigration, *Immigration*; Province of Ontario, Department of Economics and Development, *Ontario Statistical Review for 1965*. (Immigration statistics were adjusted to correspond to the June 1 to June 1 period.)

FIGURE 4
POPULATION DISTRIBUTION IN ONTARIO, 1964



SOURCE: Canada, Dominion Bureau of Statistics, *Population Estimates*; Province of Ontario, Department of Economics and Development, *Ontario Statistical Review for 1965*.

231,000. After a period of slower growth from 1958 to 1963, the growth rate began to increase again in 1963-64 when population grew by 138,000.

Population can grow in only two ways—by an excess of births over deaths, or by an excess of immigration over emigration. Figure 2 reveals that the first of these factors, net natural increase, has risen consistently over most of the postwar period. In part, this increase has been brought about by a low death rate, which has fallen from 9.7 per thousand in 1946 to 7.9 per thousand in 1964. And, in part, the increase has been a reflection of a fairly high birth rate—about 25 per thousand per year.

Net migration, the other factor in population growth, is the excess of people coming into Ontario over those leaving it. Figure 3 illustrates that net migration reached peaks in 1952-53 and 1956-57. Immigration, its main component, climbed to a peak of 147,000 in 1957 but then dropped off rapidly. However, it began to rise again in 1962 and in 1964 61,000 foreign immigrants came to Ontario. The third curve in Figure 3 illustrates the other components of net migration. Throughout Ontario's history there has been steady emigration to other countries—chiefly the United States—accompanied by continuous immigration to Ontario from the rest of Canada. The graph indicates that, except for the period from 1951 to 1955, emigration to other countries has outweighed the net gain to Ontario from inter-provincial migration.

The distribution of Ontario's population is illustrated by the population pyramid in Figure 4, showing the number of males and females in each age group. The two extremes of the population structure merit attention. At the base of the pyramid, 40.3 per cent of the population is concentrated in the group 19 years old and under, while 8.2 per cent is 65 years or over. The most prominent feature of the distribution, however, is the indentation at the 20-34 age level. This age group is comparatively small because of low birth rates from 1930 to 1944. The relatively small number of people in this group has important implications for the labour force. Like most other countries in the western hemisphere, Ontario has been experiencing shortages of skilled manpower in the 20-34 age bracket. These shortages are now being eased, however, as the first wave of the postwar baby boom enters the labour force.

LABOUR FORCE: The term "labour force" is used to describe human resources in their role as a factor of production and includes all

those 14 years of age or over who are gainfully employed or who are seeking work.

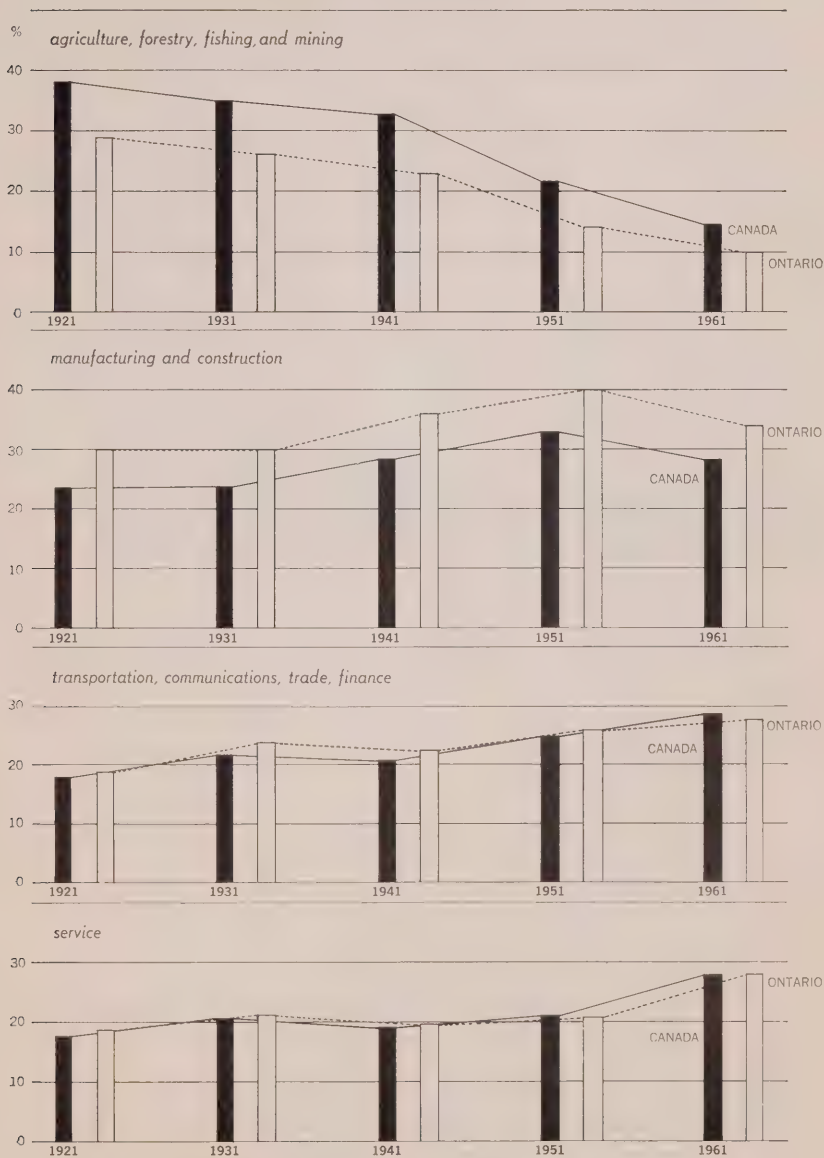
In the 18 years from 1946 to 1964 the labour force grew from 1.702 million to 2.556 million. This 50 per cent increase, however, was less than the 60 per cent increase in population during the same period. The low birth rates from 1930 to 1945 reduced the number of people entering the labour force relative to population growth.

One of the most striking developments in the labour force has been the increasing participation of women. In 1946 women accounted for less than 25 per cent of the labour force, but by 1964 this had increased to over 30 per cent. In part, this increase has compensated for the relatively low numbers of males entering the labour force, for reasons mentioned earlier. In addition, however, this trend is a reflection of the increased importance of tertiary industries in the Ontario economy. Transportation, trade, finance, and other service industries, which employ relatively more women than other industries, have been the fastest growing sectors of the economy.

Figure 5 shows that the percentage of the labour force engaged in the primary industries—agriculture, forestry, fishing, and mining—has declined steadily in this century, from 29 per cent in 1921 to 10 per cent in 1961. Over the same period, the percentage engaged in secondary industries—manufacturing and construction—rose to 40 per cent at the 1951 census, but declined in the following decade to 34 per cent. In Canada as a whole, the same trends have been apparent, the chief difference between Ontario and Canada being that Ontario has relatively fewer people engaged in primary industries and more in secondary industries than the rest of Canada. As the graphs reveal, service occupations are becoming increasingly important for the Ontario labour force. The tertiary, or service, sector accounted for 56 per cent of the labour force in 1961, compared with only 37 per cent in 1921.

Although labour, like power and raw materials, is an “input” in the production process, it should not be treated as a mass of homogeneous units. Rather, the labour force is a highly diversified group of men and women with varying skills and abilities. A glance at Figure 7 reveals that 57 per cent of the Ontario population over 5 years of age has had at least some secondary education. A full 6 per cent have received some post-secondary education. Ontario has a smaller percentage of people with very low levels of education than Canada as a whole. Of course, there is considerable room for, and need for, improvement.

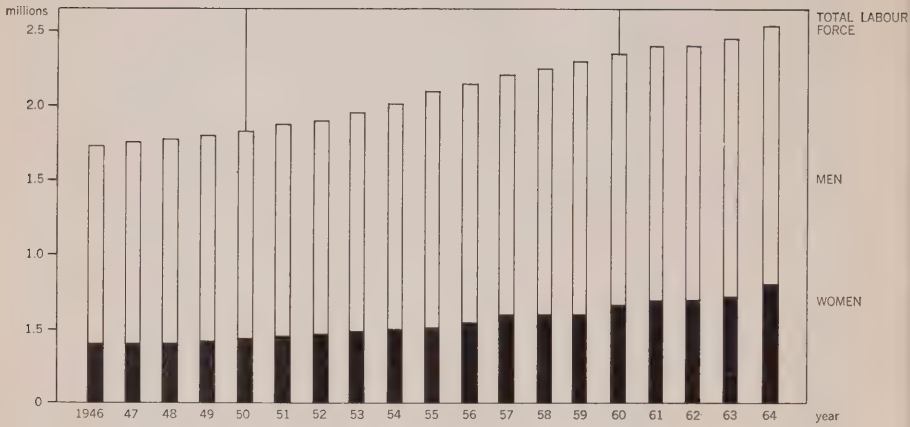
FIGURE 5
PERCENTAGE DISTRIBUTION OF THE LABOUR FORCE¹, BY INDUSTRIAL
SECTORS, CANADA AND ONTARIO, 1921-1961



¹Labour force, excluding those with industry not specified.

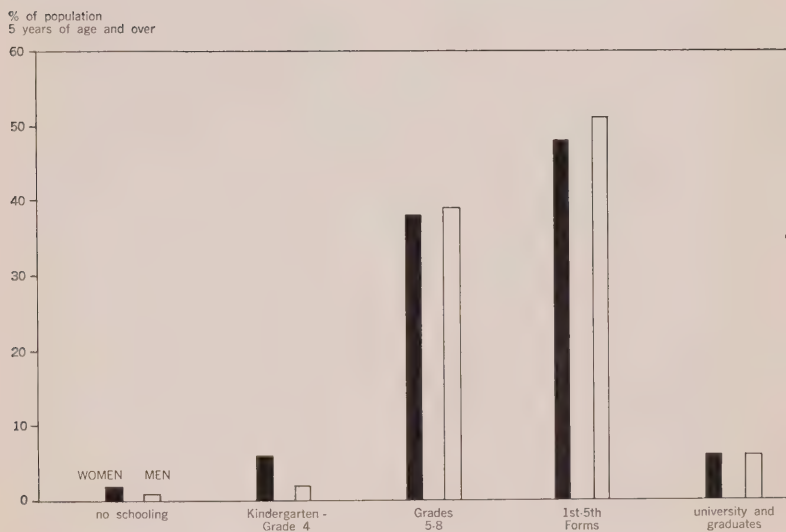
SOURCE: Canada, Dominion Bureau of Statistics, *Census of Canada*.

FIGURE 6
 ONTARIO LABOUR FORCE, 1946-1964



SOURCE: Canada, Dominion Bureau of Statistics, *Labour Force Bulletin*; Province of Ontario, Department of Economics and Development, *Ontario Statistical Review for 1965*.

FIGURE 7
EDUCATIONAL LEVELS, CANADA AND ONTARIO, 1961



SOURCE: Camu, et. al, *Economic Geography of Canada*, pp. 82-8.

C. Capital

The third and final factor of production, along with natural and human resources, is capital. In this section, "capital" will refer to physical instruments of production, rather than to financial claims on goods and services, as the term is sometimes used. Capital in this sense may be used to produce goods and services directly—as in the case of a lathe or a truck—or may contribute only indirectly—a school or a hospital, for example. All forms of capital may be distinguished by the fact that they are man-made.

THE CAPITAL STOCK: Table 10 shows some of the results of a recent study estimating the 1963 value of Canada's and Ontario's capital stock adjusted for price increases and expressed in constant 1949 dollars. In terms of these estimates, Ontario appears as the most heavily capitalized of any of the provinces, with a total capital stock of \$42 billion, approximately 35 per cent of the Canadian total. Quebec, the province ranking second, has less than 25 per cent of Canada's capital stock. Although Ontario's relatively lower per capita requirements for social capital—which includes roads, schools, hospitals, etc.—mean that it has a smaller per capita capital stock than several other provinces, it is still above the national average, as the table shows.

TABLE 10
CAPITAL STOCK BY SECTORS, ONTARIO AND CANADA, 1963

	total — in \$ billion (1949)			per capita — \$ 1949	
	Ontario	Canada	Ontario's share	Ontario	Canada
primary and secondary	11.03	28.43	38.8%	1,730	1,520
utility and commercial	11.61	32.81	35.4	1,820	1,750
social	8.00	26.68	30.0	1,250	1,430
housing	11.35	32.00	35.5	1,780	1,710
total	41.99	119.92	35.0	6,580	6,410

SOURCE: Camu, et al., *Economic Geography of Canada*, p. 113.

In order to understand the relative importance of different types of capital goods in the Ontario economy, it is useful to examine the capital stock by sectors. In each of the four major sectors, Ontario has the largest capital stock of any of the provinces. The first sector in Table 10 consists of primary industries and secondary industries—construction and manufacturing—the industries which exploit raw materials or transform them into semi-finished and

finished goods. In 1963, Ontario's investment in this sector was 39 per cent of the Canadian total—an indication of the province's dominant role in manufacturing in Canada. On a per capita basis, Ontario was well ahead of the Canadian average. Utility and commercial, the second capital goods sector, is made up of the power, transportation, and communications industries, along with trade, finance, and commercial services. Like the primary and secondary sector, it contributes directly to production, although it does so by generating services rather than goods. Ontario, in 1963, had over 35 per cent of the capital stock in this sector in Canada. The third sector, social capital, is the only sector in which Ontario's percentage of the capital stock—30 per cent—was less than its percentage of Canada's population (34 per cent). This reflects the high population density of Ontario and the resulting low per capita requirements for roads, bridges, and other social capital. Housing, the fourth sector, is really an *end* of production although, like social capital, it might be considered to be an indirect *means* of production. In this sector Ontario is again above the per capita average for Canada; its capital stock was more than 35 per cent of the Canadian total.

CAPITAL INVESTMENT: Ontario's capital stock is continually being added to by the process of capital investment. The most striking feature of this investment is the fact that it fluctuates widely in cycles of several years' duration. In Canada in recent years it has risen as high as 27.3 per cent of the gross national product in 1957 and has fallen as low as 21.6 per cent of the gross national product in 1962. Economic theory shows that an increase in investment will raise the gross national product by an amount greater than itself. This effect is called the *multiplier*. Because of the multiplier, variations in investment greatly affect the level of economic activity.

The figures for new capital investment are given in the graphs of Figure 8. In each graph the line is drawn so that its slope indicates the average rate of change in the period under consideration. The graph of total investment for Ontario corresponds quite closely to the graph for Canada. From 1951 to 1958, Ontario, and Canada as a whole, experienced a great capital investment boom which, after a slowdown in 1954, reached its peak in 1956-57. Capital spending then declined sharply, remaining below the trend from 1959 to 1964, but rising steadily since 1961.

The leading investment sectors in the postwar period in Ontario have been primary and secondary industry, where investment tends

to vary with the expected level of economic activity. It will be observed that the graph for this sector crosses the trend line on the upswing in 1951, dips below in 1954, and then falls below the trend in 1958. In 1963-64 it again moves above the trend line.

Investment in the utilities and commercial sector displays most of the cyclical characteristics of the primary and secondary sectors. The main difference is a tendency to lag behind the secondary sector—by several months in 1951, which grew to a gap of almost two years by 1960.

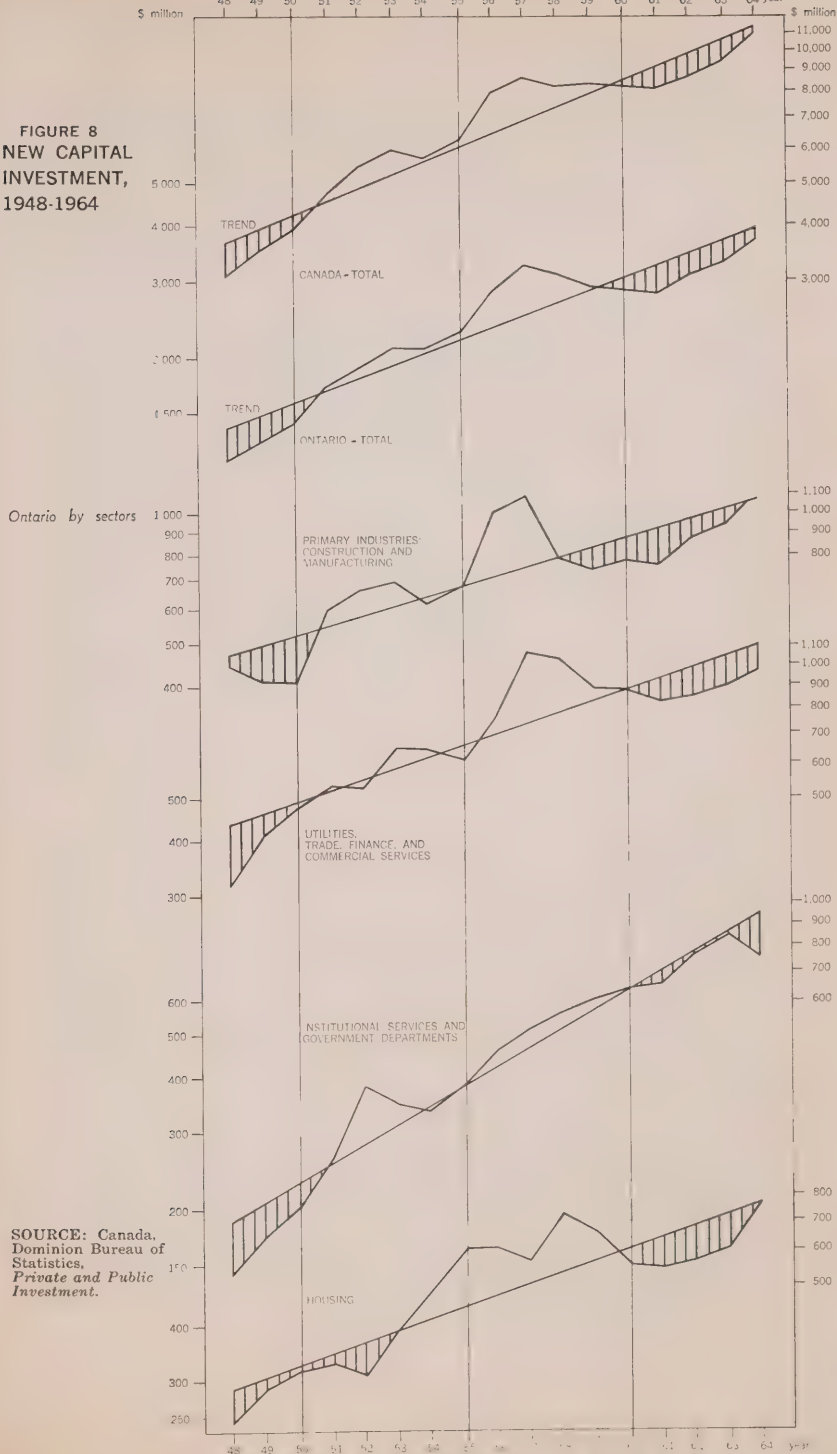
It will be noted that the graph of investment in social capital bears less relation to the total level of investment activity than the graphs of the first two sectors. In the period under discussion, it was the fastest growing sector of capital spending, rising from less than \$150 million in 1948 to a high of almost \$850 million in 1963. A major factor in the boom during the period from 1951 to 1963 was the high postwar birth rate, which resulted in a steady demand for new elementary and secondary schools. Although educational investment declined in 1964, the first wave of postwar infants has now reached university age and capital expenditures on post-secondary institutions are increasing.

Because of the durability of housing, the fourth sector exhibits a strong cyclical nature. In 1957 its peak coincided with high levels of capital spending in the other sectors. And, after a period of slow growth from 1959 to 1962, activity in this sector in 1963-64 indicates that Ontario was about to experience the beginning of a new housing boom.

THE FINANCING OF CAPITAL INVESTMENT: In order to invest in capital goods, Canadians as a whole must not consume all of current production. The saving that results can then be used to add to the stock of means of production. In other words, Canadians must not spend all their money income on consumer goods but must save part of it in order to purchase capital goods, or goods which can be used to produce more goods.

In the postwar period, Canada has been dependent upon non-residents, chiefly from the United States, for a large part of the funds used to buy capital goods. In the years from 1946 to 1960 the net use of funds from outside the economy was \$8 billion—about 9 per cent of total capital investment in Canada during this period. Most of this foreign financing was concentrated in primary and secondary manufacturing. Foreign investment has been an important factor in the postwar growth of the Canadian economy as a whole, and, of course, of the Ontario economy.

FIGURE 8
NEW CAPITAL
INVESTMENT,
1948-1964



SOURCE: Canada,
Dominion Bureau of
Statistics,
Private and Public
Investment.

4/Sectors of production

The characteristics of demand in the markets for Ontario's products were discussed in chapter 2. The discussion in chapter 3 outlined the various resources of the Ontario economy—its broad natural resource base, its large population, and its vast stock of capital. In addition to this snapshot of the current resources of the economy, enough indication of the postwar trends in resource development—the exploitation of new mineral resources, the large flow of immigrants, and the tremendous increases in social capital—was given to illustrate the dynamic nature of the Ontario economy. This chapter turns to a discussion of how the Ontario economy allocates its resources among their many competing uses in primary, secondary, and tertiary industries. In each of these, the situation in the mid-1960's will be considered in the light of postwar developments.

A. *Primary industries*

The primary sector consists of those industries engaged in the direct exploitation of natural resources. In mining, for example, the mineral is extracted from its natural environment and then passed through a stage of simple processing. The other primary industries discussed here are agriculture, forestry, and electric power. For convenience, a number of secondary industries will be considered in connection with closely related primary industries. It seems appropriate, for instance, to discuss smelting and refining along with mining, since the same firms are usually involved in both stages of production.

AGRICULTURE: As indicated earlier, agriculture in Ontario has been declining by comparison with other sectors of the economy. Nevertheless, it remains the most important industry in the primary sector. Most of Ontario's agricultural products are consumed in Canada, but they are also a significant source of exports to international markets. Tobacco and oilseed products are two

of Ontario's leading exports, as was shown in chapter 2. Also prominent among Ontario's exports are livestock and vegetable products. Geographically, as was illustrated earlier by means of a map, agriculture in Ontario is concentrated in the southern part of the province. There is considerable regional specialization in the major cash crops. Tender fruit is grown in the Niagara Peninsula, market vegetables are raised in the Holland Marsh area north of Toronto, and tobacco is grown north of Lake Erie.

The first graph of Figure 9 shows that in 1962 the gross value of production in this sector was \$1.3 billion. In 1964 it was almost \$1.4 billion. Net value of production, the figure which should be used when comparing output in the various sectors, is shown in the lower graph. From 1948 to 1952, net value of production rose sharply, reaching a high of \$586 million in 1952. During the rest of the 1950's, however, production was well below this level, for reasons which will be discussed later. The 1952 level was not surpassed again until 1962, when net production was \$597 million. As the trend line indicates, the overall level of output increased very slowly from 1948 to 1962, probably no more than necessary to compensate for price increases.

TABLE 11
AGRICULTURE IN ONTARIO, 1951 AND 1961, PRINCIPAL STATISTICS

	total		per farm		
	Ontario		Ontario		Canada
	1951	1961	1951	1961	1961
number of farms	150,000	121,000	—	—	—
area (acres)	20.9 million	18.6 million	139	153	359
labour force in agriculture	201,000	169,000	1.3	1.4	1.3
value of machinery and equipment	\$445 million	\$579 million	\$2,970	\$4,770	\$5,340
farm cash receipts	\$801 million	\$891 million	\$5,340	\$7,364	\$6,217
net value of production ¹	\$573 million	\$543 million	\$3,820	\$4,498	\$3,482

¹Operating expenses (excluding taxes on all farmland, net farm rent, depreciation, purchased services, wages to paid labour and interest on mortgages and other debt) are deducted from gross farm production (less house rent) to give the net value of farm production.

SOURCE: Canada, Dominion Bureau of Statistics, *Census of Canada 1961*, Bulletins 5.1-1 and 5.2-2; Canada, Dominion Bureau of Statistics, *Survey of Production 1961*; Ontario, Department of Agriculture, *Handbook of Agricultural Statistics 1964*; Ontario, Department of Economics and Development, *Ontario Statistical Review for 1965*.

Recent developments in Ontario agriculture may be seen in Table 11. The first point to note is that the number of farms

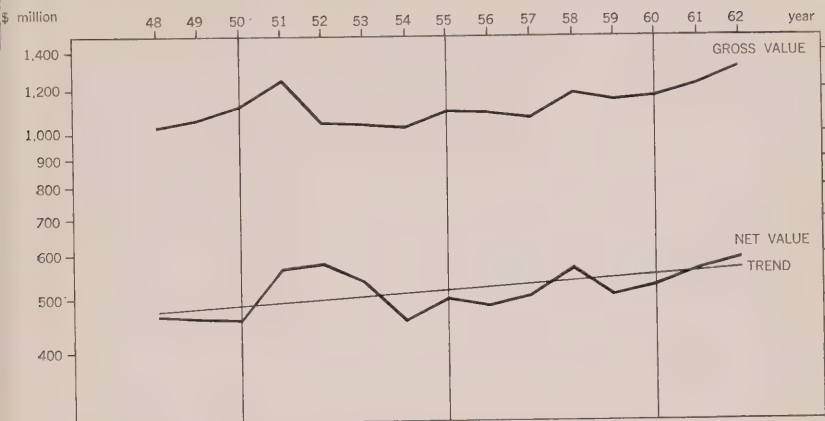
declined sharply over the decade from 1951 to 1961, reflecting both the increased size of urban areas and the abandonment of many marginal, or relatively unproductive, farms. The total area of farmland also declined, but the average area of each farm increased from 139 acres to 153 acres. Evidently, large farms have become economically desirable. The other striking development is the partial substitution of capital for labour as a factor of production. The number of workers per farm increased only slightly but the value of machinery and equipment per farm rose dramatically from \$2,970 to \$4,770. Finally, while there was actually only a slight increase in farm cash receipts, the average for such receipts rose from \$5,340 to \$7,364 per farm and increased productivity permitted the net value of production per farm to grow from \$3,820 to \$4,498 over the period.

The comparison between Ontario and Canada in the last two columns of Table 11 reveals the special nature of Ontario agriculture. The average area of Ontario farms was less than half the average area for Canada as a whole. The Canadian figures, of course, are strongly influenced by the large scale of wheat growing in the prairie provinces. Despite their relatively small area, Ontario farms do not differ greatly from the national average in terms of capital and labour per farm. Machinery and equipment per farm in Ontario is a little less than the average for Canada, while labour per farm is slightly greater. The high productivity of Ontario farms is shown in the figure for average net value of production per farm, which is considerably greater than the national average.

Far from being a static sector, Ontario agriculture has been undergoing great changes in recent years. In particular, there has been a pronounced trend away from general farming toward specialized agriculture oriented to growing urban markets. Table 12 shows that Ontario's three largest cash crops—tobacco, vegetables, and fruits—are all of a specialized nature. Similarly, cattle and dairy products are in the lead among other agricultural products. In fact, these five types of product accounted for 60 per cent of Ontario's farm cash income in 1964.

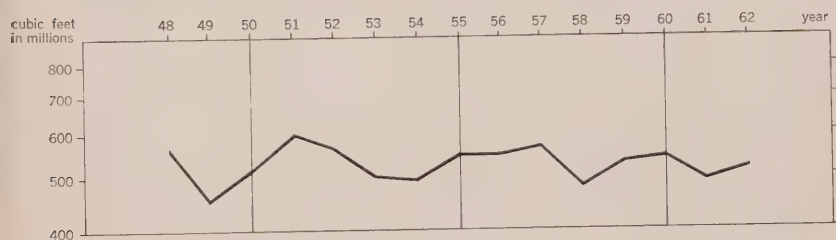
Ontario's position in Canadian agriculture becomes clear in the third column of Table 12. In 1964 Ontario accounted for only 3 per cent of Canada's cash income from wheat, Canada's leading agricultural product. However, in each of the other categories in the table, Ontario was the leading province, accounting for from 36 per cent of the Canadian total in the case of cattle and calves to 96 per cent of the Canadian total in the case of tobacco. Ontario accounted for 29 per cent of Canada's farm cash income in 1964.

FIGURE 9
GROSS AND NET VALUE OF PRODUCTION IN AGRICULTURE,
ONTARIO, 1948-1962



SOURCE: Canada, Dominion Bureau of Statistics, *Handbook of Agricultural Statistics, Part I: Field Crops; Survey of Production 1962*; Province of Ontario, Department of Agriculture, *Agricultural Statistics for Ontario 1964*.

FIGURE 10
ESTIMATE OF FOREST PRODUCTION, ONTARIO, 1948-1962



SOURCE: Canada, Dominion Bureau of Statistics, *Logging 1962*.

TABLE 12
SOURCES OF FARM CASH INCOME, ONTARIO, 1951 AND 1964

	(\$ million)		Ontario as % of Canada
	1951	1964	1964
<i>crops</i>			
tobacco	55	92	96
vegetables	34	55	64
fruits	15	33	46
wheat	24	23	3 ¹
<i>livestock and products</i>			
cattle and calves	160	230	36
dairy products	137	206	39
hogs	159	128	39
poultry	65	71	41
eggs	54	56	42
<i>other products and payments</i>	80 ²	103	10 ¹
<i>total</i>	783²	997	29¹

¹ Not including Canada Wheat Board cash advance payments.

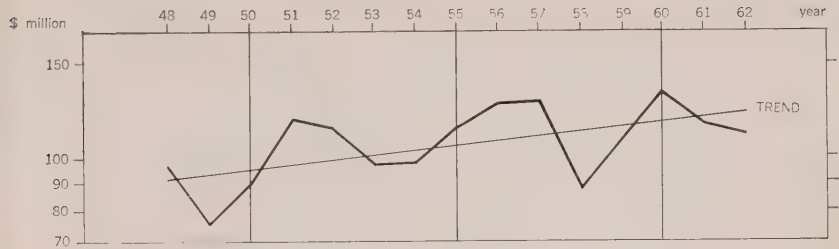
² Excluding fur farms.

SOURCE: Canada, Dominion Bureau of Statistics, *Farm Cash Receipts 1964*.

FOREST INDUSTRIES: The forest industries are another important sector of the Ontario economy. They produce two of Ontario's leading exports—wood pulp and newsprint. Consequently, this group of industries is one of the keys to Ontario's economic growth. Except for several large paper mills and some plants manufacturing certain wood and paper products, the forest industries are located close to the natural resource. In fact, most of the large sawmills and pulp and paper mills are in northern Ontario or along the Ottawa River.

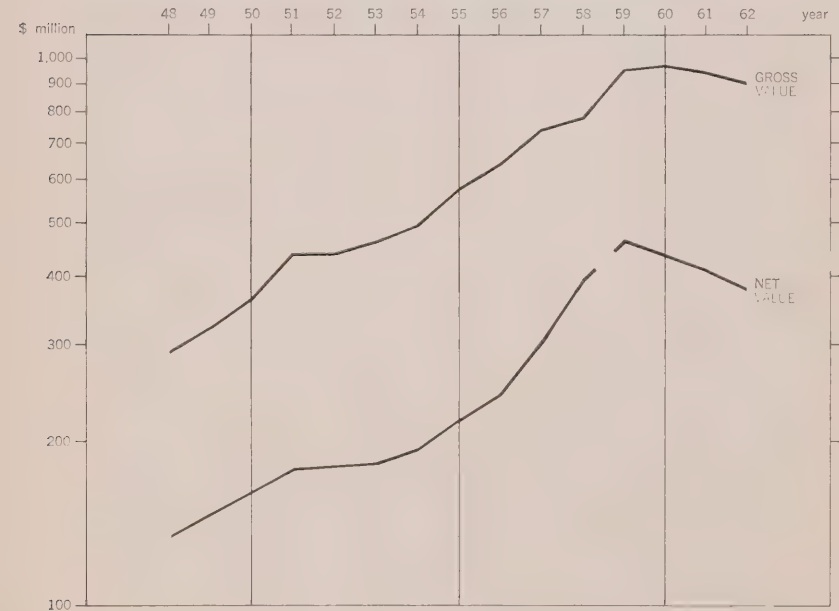
For convenience, the forest industries may be divided into one primary group and two secondary groups. Forestry, the primary group, is engaged in exploiting Ontario's forest resources directly, cutting the trees and transporting them to the mills. Over the postwar period, output has tended to vary substantially from one year to the next, according to market prices for these products. As Figure 10 shows, the volume of output reached a record high in 1951 and hit cyclical peaks in 1957 and 1960. The graph of net value of production in Figure 11 reached peaks in these same years, although in dollar terms the 1960 level was the highest. Considering the low slope on the trend line, however, one must conclude that the overall level of output has not altered greatly in the years

FIGURE 11
NET VALUE OF PRODUCTION IN FORESTRY, ONTARIO, 1948-1962



SOURCE: Canada, Dominion Bureau of Statistics, *Survey of Production 1962*.

FIGURE 12
GROSS AND NET VALUE OF PRODUCTION IN MINING IN ONTARIO, 1948-1962



Note: The break in 1958 indicates a change in classification.

SOURCE: Canada, Dominion Bureau of Statistics, *General Review of Mineral Industries 1962*.

since the Second World War. Nevertheless, productivity per man has increased, for this relatively steady level of output was produced with a labour force which declined from 1951 to 1961. Census figures for the labour forces engaged in a particular industry are not strictly comparable for 1951 and 1961. The trend in this sector appears clear, however.

Table 13 shows the principal statistics of primary forestry in Ontario in 1961. The labour force numbered 17,900 while the net value of production was \$115 million. Ontario ranked third, behind British Columbia and Quebec, and accounted for 17 per cent of Canadian production.

The other group of forest industries in the table are secondary industries, or industries involved in processing forest products which have undergone simple treatment in the primary sector. Postwar growth in this sector can be seen in Figure 18, in the following section dealing with manufacturing. In the period from 1948 to 1956 the selling value of factory shipments from wood industries, including furniture industries, increased by a full 62 per cent, while from 1957 to 1964 growth slowed to an estimated 37 per cent. The rate of growth was somewhat less than the average for all manufacturing.

TABLE 13
ONTARIO FOREST INDUSTRIES, PRINCIPAL STATISTICS, 1961

	labour force	production	
		net value in \$ million	Ontario as a % of Canada
<i>primary</i>			
forestry	17,900	115	17
<i>secondary</i>			
wood industries	20,000 ¹	81	19
sawmills	7,200	22	10
veneer and plywood mills	2,200	12	20
sash and door, planing mills	5,800	23	25
other industries	4,900	23	40
paper and allied industries	37,700 ¹	357	33
pulp and paper mills	21,900	234	28
asphalt roofing manufacturers	600	5	27
paper box and bag manufacturers	8,500	62	49
other paper converters	6,800	56	68
total	75,600	553	26

¹ Figures may not equal total due to rounding.

SOURCE: Canada, Dominion Bureau of Statistics, *Census of Canada 1961; Survey of Production 1961; Manufacturing Industries of Canada 1961*.

Table 13 indicates that the wood industries group accounted for 20,000 workers in 1961, with a net value of production of \$81 million. In that year, Ontario accounted for 19 per cent of total Canadian production, once again ranking third among the provinces. As in primary forestry, productivity per worker was increasing. This increased output was produced by a labour force which declined from 1951 to 1961.

The largest group of forest industries is the export-oriented paper and allied industries group. Like the wood industries, this group is engaged in secondary production, converting pulpwood into pulp and paper products. Pulp and paper mills are the most important industry of this group, although producers of asphalt roofing, paper boxes and bags, and other paper products are also included.

In the first part of the postwar period, the paper and allied industries experienced fairly rapid growth. Shipments increased by 72 per cent from 1948 to 1956. Growth then slowed to an estimated 35 per cent from 1957 to 1964. In contrast to the primary forestry industry and the wood industries, employment increased in the decade after 1957. Because of higher productivity, however, employment increased much less rapidly than production. In 1961 Ontario was second to Quebec in this group, with a net value of production of \$357 million—33 per cent of the Canadian total.

Taking forest industries together, Ontario yielded 26 per cent of Canada's net production in 1961—ranking a close third after British Columbia and Quebec. A comparison between agriculture and forest industries in Ontario reveals the relative importance of the two sectors. Although forest industries accounted for fewer than half as many workers as agriculture in 1961, they produced a net value of \$553 million—slightly more than the \$543 million net value of production in agriculture in that year. The statistics for agriculture were presented in Table 11.

MINING AND RELATED INDUSTRIES: Among Ontario's resource-based industries, one of the fastest growing sectors in the postwar period has been mining and related industries. Like the forest industries, this sector is particularly important as a producer of exports from Ontario to international markets. In the table of Ontario's leading exports in chapter 2, four of the sixteen commodities listed were mineral products; namely, nickel, copper, iron, and uranium. Most of the mineral industries are located in northern Ontario, close to the natural resources.

The rapid postwar growth of mining becomes clear in the two graphs of Figure 12. Gross value of production, shown in the upper graph, increased without a break in the years from 1948 to 1960, rising from \$294 million in 1948 to \$983 million. Since 1960, for reasons which are discussed below, production has failed to exceed this record level: the gross value in 1962 was \$913 million and in 1964, \$911 million. The graph of net value of production gives a similar picture, rising to a peak of \$468 million in 1959, but declining to \$383 million in the following three-year period.

The main factors behind this striking growth can be seen in the first two columns of Table 14. In absolute terms, metalics were the leading group, almost doubling their output from 1951 to 1964. Within this group, most of the increase was accounted for by nickel, copper, and iron ore, the three leading products in 1964. Production of gold declined somewhat over the period, owing on the one hand to rising costs and on the other hand to a fixed price in international markets. The product with the most remarkable growth record, however, was uranium, for which production leaped from almost nothing in 1951 to \$269 million in 1959. Underlying this growth was foreign demand, chiefly for military uses, and mainly in the United States. By 1959 most of the stock-piling requirements had been met, and production subsequently declined to \$74 million in 1964. Nevertheless, with the expansion of the commercial use of uranium, the long-term outlook for this metal remains good.

Among the non-metallics, salt was the main source of growth, almost tripling its output from 1951 to 1964. Production of nepheline syenite, used for glazing ceramics, also increased. In addition, Ontario's fuel industries stepped up their production to \$9 million in 1964.

Of the four groups, the one which grew most rapidly was structural materials. Production almost tripled from \$60 million in 1951 to \$166 million in 1964. In contrast to the metalics, most of these materials are produced for use in Canada, mainly in Ontario.

The third column of Table 14 indicates Ontario's position in Canadian mineral production. In each of the metals mentioned, except iron ore and zinc, Ontario was the leading province. It is interesting to compare these percentages with those of Table 15, which gives Canada's position in world metal production. Since Canada accounted for 70 per cent of the world's production of nickel, and since Ontario accounts for most of Canada's output of this metal, Ontario is obviously the world's leading nickel producer. A glance at these two tables also shows that Ontario is important in world production of several other metals. Moreover, although

uranium is not included in Table 15, it should be mentioned that Canada is the leading supplier of uranium in the western hemisphere and that Ontario accounts for most of this. Taking the metals as a group, Ontario produced 42 per cent of the Canadian total.

TABLE 14
GROSS VALUE OF MINERAL PRODUCTION IN ONTARIO, 1951 AND 1964

	1951 (\$ million)	1964 (\$ million)	Ontario's share of Canadian production, 1964 (%)
<i>metallic minerals</i>	367	712	42
nickel	151	269	70
copper	71	133	40
iron ore	21	84	21
gold	91	81	56
uranium	n.a. ¹	74	87
platinum	15	25	100
zinc	0	19	10
silver	4	15	34
others	14	12	12
<i>non-metallic minerals</i>	14	25	8
salt	5	14	63
nepheline syenite	1	3	100
asbestos	4	2	2
others	4	6	5
<i>fuels</i>	4	9	1
natural gas	3	5	3
petroleum	1	4	1
<i>structural materials</i>	60	166	41
sand and gravel	20	53	43
cement	13	48	36
stone	10	29	35
clay products	10	23	58
lime	7	13	64
total	445	911	27

¹ Not available, but probably less than \$1 million.

SOURCE: Canada, Dominion Bureau of Statistics, *Preliminary Report on Mineral Production 1964*; Province of Ontario, Department of Mines, *Statistical Review of the Mineral Industry and Mining Operations 1965*.

Among the non-metallics, salt and nepheline syenite are most important. As might be expected, the province produces only a small percentage of Canada's fuels. In structural materials, however, Ontario is once again the leading province, with at least 35 per cent of Canadian output in each category.

TABLE 15

CANADA'S POSITION IN WORLD PRODUCTION OF METALS, 1962

	Canada's rank	% of world production
nickel ¹	1	70
zinc	2	15
gold ¹	2	11
copper ore	4	10
silver ¹	4	14
iron ore	5	6

¹ Excluding U.S.S.R.

SOURCE: United Nations, Office of Statistics, *Statistical Year Book 1963*.

At this point it may be appropriate to move from an examination of Ontario's mineral production by commodities to consider the place of mining and related industries in the economy, both of the province and of the country. The principal statistics of mining and related industries in Ontario are displayed in Table 16. Note that *net* rather than *gross* figures are used (to avoid double counting) and that the secondary mineral industries are grouped separately from the primary ones.

The primary group includes those mining industries engaged in the actual extraction of Ontario's mineral resources. In 1961 it had a total output whose net value was \$414 million—27 per cent of the Canadian total. With the tremendous growth in the decade from 1951 to 1961, the labour force engaged in this area increased, reaching 42,700 in 1961. Nevertheless, the primary minerals group still ranks behind agriculture in employment and output.

The secondary group listed in Table 16 consists of those industries using the products of the primary group as inputs, except for iron and steel, which will be considered later in the section on manufacturing. Smelting and refining was by far the most important industry in this group, with output valued at \$266 million and a labour force of 11,040 in 1961. Rolling and casting operations and petroleum and coal products were also important industrial groups: the net value of production was \$57 million and \$91 million respectively in 1961. The other industries listed are all processors of non-metallics or structural materials, and are located mainly in southern Ontario. Ontario was relatively more important in the secondary group than in the primary group, accounting for 46 per cent of Canadian production.

In 1961 the primary and secondary groups combined produced a total net value of output of \$1,012 million. This was considerably

more than the output in either agriculture or the forest industries. Nevertheless, mining and related industries employed only 86,866 workers—considerably fewer than in agriculture and only slightly more than in forestry. Productivity per worker is evidently quite high in the mining and related industries.

TABLE 16

ONTARIO MINING AND RELATED INDUSTRIES, PRINCIPAL STATISTICS, 1961

	labour force	production	
		net value in \$ million	Ontario as a % of Canada
<i>primary</i>			
mines, quarries, and oil wells ¹	42,700	414	27
<i>secondary</i>			
smelting and refining ²	11,040	266	50
rolling and casting	7,745	57	66
petroleum and coal products	5,835	91	31
concrete products ³	5,347	47	46
glass products	5,092	39	90
clay products ⁴	2,557	18	50
asbestos products	967	10	50
stone products	363	2	34
other	5,220	68	46
total	86,866	1012	36

¹ Includes services incidental to mining.

² The complete primary metals group, excluding iron and steel mills, steel pipe and tube mills, and iron foundries.

³ Includes ready-mix concrete manufacturers.

⁴ Domestic and imported clays.

SOURCE: Canada, Dominion Bureau of Statistics, *Manufacturing Industries of Canada 1962; Survey of Production 1961*.

TRAPPING: Today there are more people in Ontario making asphalt roofing than are engaged in the industry that dominated the history and economy of the province for more than two centuries. The fur trade, or trapping, is a small and declining sector of the Ontario economy. The lower graph in Figure 13 illustrates the trend in the net value of production. It fell to less than \$2.5 million—24 per cent of the Canadian total—in 1962. The Ontario trapping industry employed only 380 workers in 1961.

FISHERIES: The story in fisheries is similar. As a result of a decline in the Great Lakes fisheries, output has fallen in recent years. The net value of Ontario fisheries production in 1962 was about \$5.3

FIGURE 13
NET VALUE OF PRODUCTION IN FISHERIES AND TRAPPING IN ONTARIO,
1948-1962

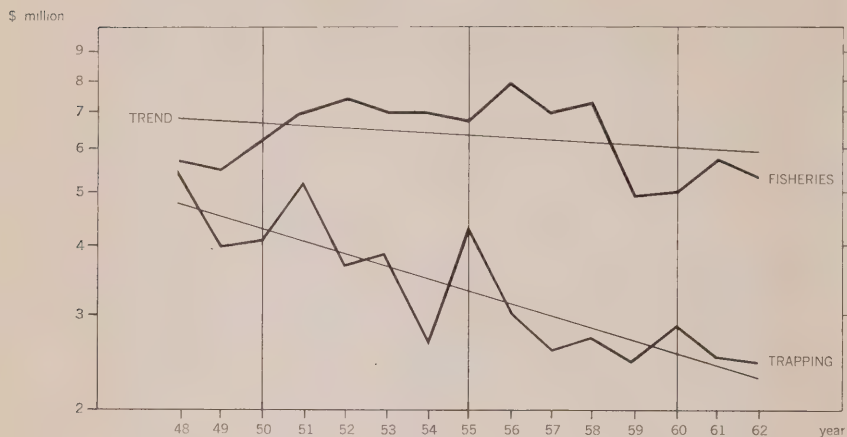
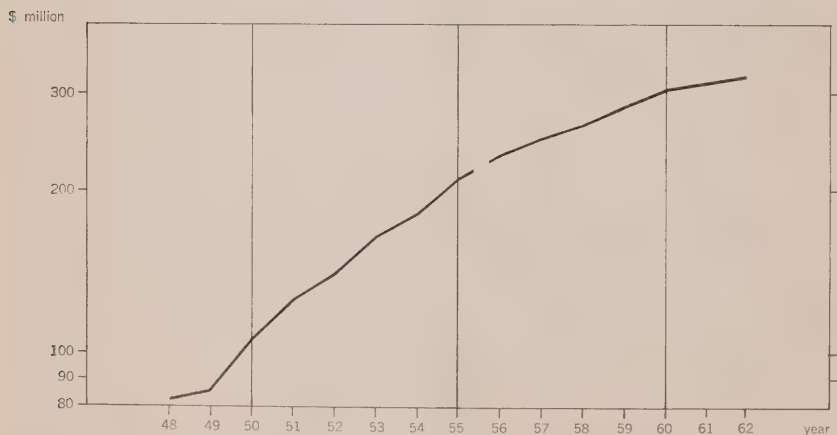


FIGURE 14
NET VALUE OF PRODUCTION IN ELECTRIC POWER IN ONTARIO, 1948-1962



Note: A break occurs in 1956 — a change in classification.

SOURCE: Canada, Dominion Bureau of Statistics, *Survey of Production 1962*.

million — 4 per cent of total Canadian fisheries production. The labour force engaged in fisheries in the census year of 1951 was 1,800. The upper graph in Figure 13, showing the trend of production since 1948, indicates that, like trapping, the fisheries are a declining sector of the Ontario economy.

ELECTRIC POWER: The primary and related industries which have been discussed so far have in common the fact that they use natural resources to produce tangible commodities such as tobacco or paper or nickel. The industry to be considered next, however, produces a commodity of a different sort, namely, energy. Yet energy in the form of electricity is derived from natural resources—from falling water, for example—and is produced in quantities which can be measured, in kilowatt-hours. There is good reason, then, for including electric power in the primary sector.

Electrical energy is both a basic input in each of the sectors producing goods and services and also a good which is itself consumed. Thus demand for electric power is spread throughout the Ontario economy. It is not surprising that production of electrical energy has increased rapidly and continuously with the expansion of the Ontario economy since the Second World War. From a net value of \$83 million in 1948, production climbed to \$318 million in 1962. This figure represented 36 per cent of Canadian production. Note the steep slope of the graph in Figure 14, compared with the gradual slope of the graphs for some of the other primary sectors. For a more detailed discussion of developments in electric power, reference should be made to the section on water resources in chapter 3.

B. Secondary industries

Secondary industries are so called because they use the products of primary industries to make more highly processed goods. Earlier, any discussion of secondary industry has dealt chiefly with manufacturing, and the distinction was made between “partly” and “fully” manufactured goods. Together these make up one sector of secondary industry. There is another sector which has not yet been touched upon except indirectly, namely construction. Manufacturing and construction can be distinguished from each other by the fact that the products of construction are stationary, while those of manufacturing are mobile and may be transported to near or distant markets.

The concern of this section will be to show the direction of recent developments in Ontario's secondary industries and to indicate the place of these industries in the economy of the province and of the nation.

MANUFACTURING: More important than all other primary and secondary industries combined, Ontario manufacturing dominates the provincial economy. It provides employment for one out of every four Ontario workers and accounts for almost 70 per cent of the net value of goods produced in Ontario. In contrast to forestry and mining, which are centred in northern Ontario, manufacturing is concentrated in the southern part of the province. Southern Ontario industries produce 90 per cent of the provincial manufacturing output.

From 1962 to 1964 fully manufactured products, over half coming from Ontario, were the fastest-growing group among Canada's exports. Exports of this type increased by almost 70 per cent, from \$655 million in 1962 to \$1,109 million in 1964. More than half of these exports came from Ontario, where manufacturing has recently moved more and more in the direction of producing goods for export.

The postwar trends in Ontario manufacturing production are indicated in Figure 15. The upper graph shows that gross output increased rapidly in the first part of the period, rising from \$5.7 billion in 1948 to \$10.7 billion in 1957. From 1957 through 1960, however, the rate of growth slowed considerably. Then, during 1961 and 1962, the pace again quickened, with gross production climbing to \$13.3 billion in 1962. The lower graph indicates the same trends, with net value of production reaching almost \$6 billion in 1962, compared with \$2.5 billion in 1948.

Much of this growth can be accounted for by productivity gains resulting from the heavy capital investment which was noted in chapter 3. Part of this increase, however, was made possible by an expanding labour force. Employment in manufacturing increased from 550,000 in 1948 to 660,000 in 1962, as shown in Figure 16. The number of manufacturing establishments rose slowly from 1948 to 1956, fell from 1957 to 1959, and then rose slightly again. In 1962, Figure 17 indicates, there were 12,600 manufacturing establishments in the province. Evidently, the great growth in output was accounted for mainly by enlarged production in existing establishments rather than by the formation of new establishments.

The relative importance of the various groups of industries engaged in manufacturing is indicated in Table 17, which lists the

FIGURE 15
GROSS AND NET VALUE OF PRODUCTION IN MANUFACTURING IN ONTARIO, 1948-1962

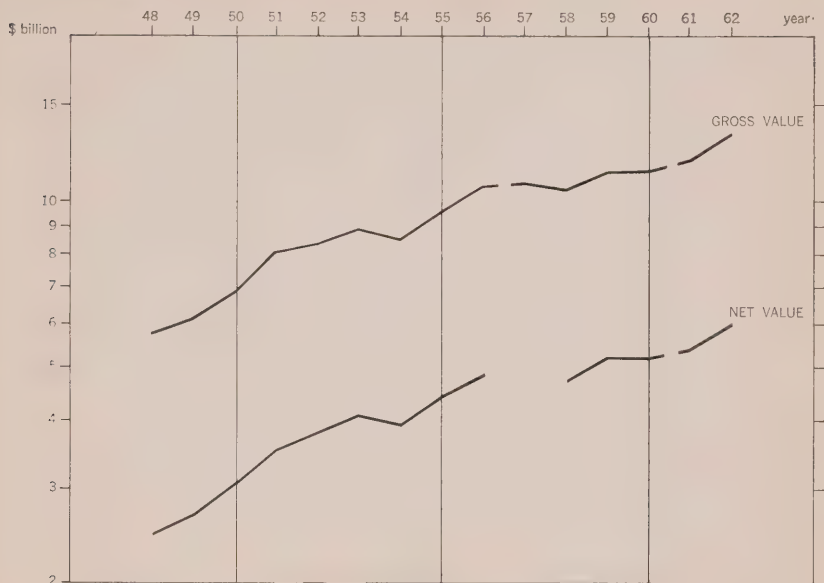


FIGURE 16
EMPLOYMENT IN MANUFACTURING IN ONTARIO, 1948-1962

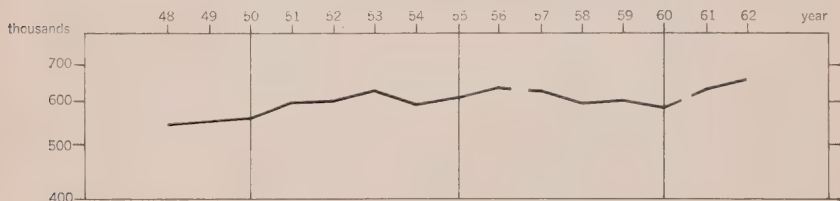
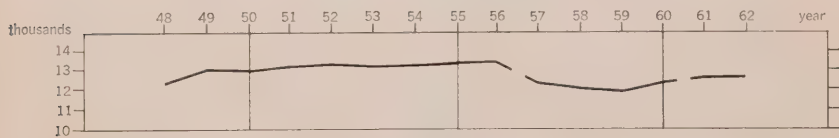


FIGURE 17
NUMBER OF MANUFACTURING ESTABLISHMENTS IN ONTARIO, 1948-1962



Note: Breaks in graphs indicate classification changes.

SOURCE: Canada, Dominion Bureau of Statistics, *Manufacturing Industries of Canada 1962*.

twenty groups in order of net production in 1961. Although some of these groups were discussed in section A of this chapter, they are included in the table in order to give a comprehensive picture of Ontario manufacturing. The largest single group in 1961 was made up of the food and beverage industries, which had a total net production of \$759 million. Close behind were the primary metal industries, with net production valued at \$745 million. As was stated earlier, smelting and refining accounted for \$266 million and iron and steel mills for \$354 million of this total. Rolling and casting, steel pipe and tube mills, and iron foundries accounted for the rest.

It is interesting to compare these manufacturing groups with primary industries such as agriculture, discussed in the preceding section. Both food and beverage and metal industries were well ahead of agriculture, which, it will be remembered, had a net production valued at \$543 million in 1961. Higher productivity, however, permitted this output to be produced with a labour force one half the size of that employed in agriculture in the case of food and beverages, and less than one third that in agriculture in the case of primary metals. Food and beverages, primary metals, transportation equipment, chemicals and chemical products, metal fabricating, and electrical products, as was stated earlier, were all more important in terms of net value of production than either the primary mining industry or the electric power industry. Moreover, all but the seven smallest groups listed below had a greater net value of production than the primary forestry industry in 1961.

In the overview in chapter 1 it was mentioned that Ontario had a comparative advantage in manufacturing relative to the other provinces, mainly owing to its resources and geographic location. The effect of this advantage is revealed in the third and fourth columns of Table 17. In fact, Ontario was the leading province in thirteen of the twenty industrial groups. The province's percentage of net production in these groups ranged from 31 per cent in petroleum and coal products to 74 per cent in machinery. Note that most of the industries in these leading groups are market-oriented. In six other groups Ontario was second to Quebec, while in wood the province was behind British Columbia and Quebec, as noted in section A. Thus it was mainly in certain resource-oriented industries based on raw materials found in other provinces and in certain industries traditionally based on imported materials that Ontario failed to lead the other provinces. In all, more than 50 per cent of Canada's manufacturing output came from Ontario in 1961.

TABLE 17

MANUFACTURING IN ONTARIO, PRINCIPAL STATISTICS BY INDUSTRIAL GROUP, 1961

	labour force	production		
		net value in \$ million	rank among provinces	Ontario as % of Canada
food and beverages	84,600	759	1	45
primary metals	50,000	745	1	66
transportation equipment	65,300	535	1	65
chemicals and chemical products	35,800	445	1	59
metal fabricating	58,100	432	1	59
electrical products	54,500	423	1	68
paper and allied	37,700	357	2	33
printing, publishing, and allied	42,500	305	1	52
machinery	36,400	245	1	74
miscellaneous manufacturing	31,500	206	1	66
non-metallic mineral products	22,200	184	1	48
textiles	22,700	154	2	39
rubber	12,700	130	1	72
clothing	23,800	101	2	27
petroleum and coal products	5,100	91	1	31
furniture and fixtures	16,100	90	1	49
wood	20,000	81	3	19
leather	14,400	65	2	47
knitting mills	8,000	42	2	42
tobacco products	1,900	40	2	31
all industries	643,300	5,430	1	51

SOURCE: Canada, Dominion Bureau of Statistics, *Manufacturing Industries of Canada 1961; Census of Canada 1961.*

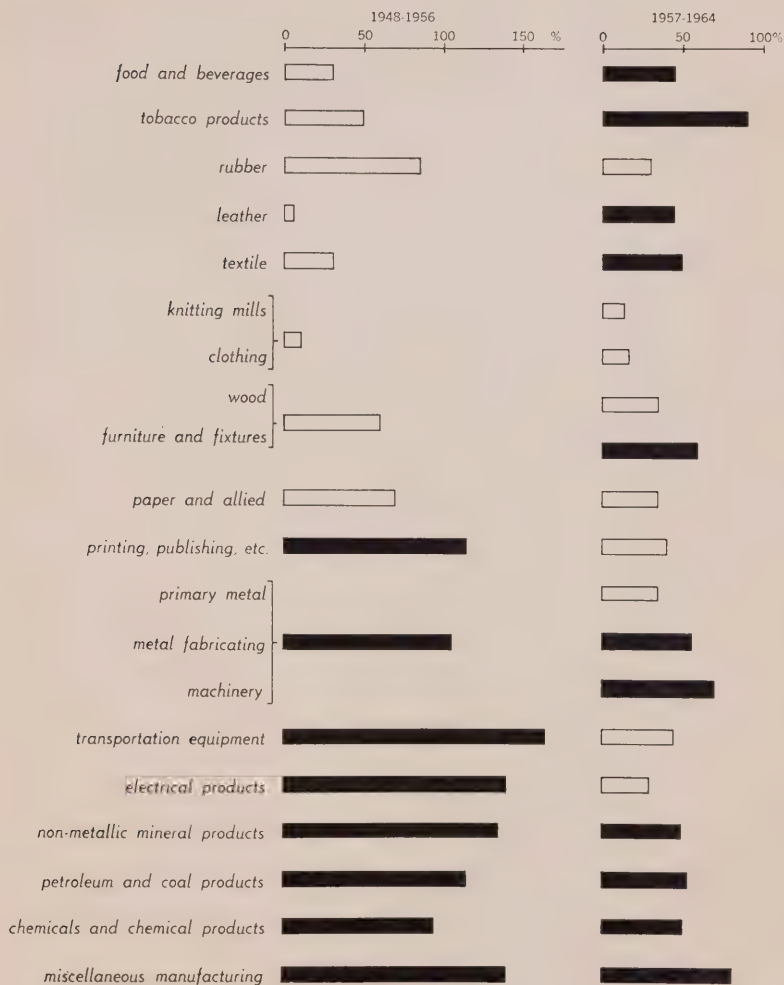
Growth in the postwar period has not been spread evenly throughout Ontario's manufacturing industries. The chart in Figure 18 has been designed to show the rates of growth in each of the twenty industrial groups for two periods: 1948 to 1956 and 1957 to 1964. The heavy shading indicates a growth rate above the average for all manufacturing, while the unshaded bars indicate below-average growth. It will be seen that six of the groups—metal fabricating, machinery, non-metallic mineral products, petroleum and coal products, chemicals and chemical products, and miscellaneous manufacturing — were leading in growth rate in both periods. An additional four groups — printing and publishing, primary metals, transportation equipment, and electrical products — had above-average growth rates in the first period, but showed slower growth from 1957 to 1964. A further five groups—the giant food and beverages and the smaller tobacco products, leather,

TABLE 18
LEADING MANUFACTURING INDUSTRIES IN ONTARIO IN 1963

	principal centres	production net value as % of Canada
1. motor vehicle manufacturers	Oshawa, Oakville, Windsor, Brampton	\$490,035,000 97.1
2. iron and steel mills	Hamilton, Sault Ste. Marie	424,807,000 85.1
3. pulp and paper mills		259,112,000 28.3
4. motor vehicle parts and accessories manufacturers	Windsor, Toronto, St. Catharines	244,341,000 98.0
5. smelting and refining		220,551,000 39.7
6. miscellaneous machinery and equipment manufacturers	Toronto, London, Kitchener	194,336,000 65.7
7. manufacturers of industrial chemicals	Sarnia, Cornwall, Toronto	177,990,000 61.3
8. manufacturers of electrical industrial equipment	Peterborough, Hamilton, Toronto	164,263,000 90.0
9. commercial printing	Toronto, etc.	149,441,000 59.2
10. communications equipment manufacturers	Toronto	146,649,000 68.3
11. rubber industries	Kitchener, Toronto	143,167,000 73.6
12. printing and publishing	Toronto, etc.	140,006,000 48.4
13. metal stamping, pressing, and coating industry	Toronto, Hamilton, Windsor	133,800,000 62.8
14. miscellaneous metal fabricating industries	Toronto, Kitchener	100,499,000 71.2
15. dairy factories		100,408,000 44.4
16. fruit and vegetable canners and preservers	St. Catharines, etc.	96,392,000 66.3
17. miscellaneous food manufacturers	Toronto	91,013,000 49.8
18. breweries	Toronto, London	90,131,000 44.7
19. manufacturers of soap and cleaning compounds	Toronto, Hamilton	81,515,000 87.6
20. manufacturers of major appliances	Toronto	81,482,000 76.1

SOURCE: Canada, Dominion Bureau of Statistics, *Manufacturing Industries of Canada 1963*, Sections A and D.

FIGURE 18
PERCENTAGE CHANGE IN SHIPMENTS BY INDUSTRIAL GROUP, ONTARIO,
1948-1956 AND 1957-1964



Note: Shading indicates above-average growth.

SOURCE: Canada, Dominion Bureau of Statistics, *Manufacturing Industries of Canada*. (Figures for 1964 are estimates of the Ontario Department of Economics and Development.)

textiles, and furniture—grew fairly slowly from 1948 to 1956 but subsequently exceeded the average growth rate. The remaining five groups lagged behind the average in both periods. Of these, rubber and paper and allied industries were only slightly below the average, but two smaller groups, clothing and knitting mills, showed little growth in either period. The overall picture, then, is one of high growth rates from 1948 to 1956, but somewhat slower growth in the following years.

Now that the structure and recent growth of manufacturing have been considered, it is possible to turn to a closer examination of some individual industries. Table 18 shows net production of Ontario's twenty leading industries in 1963. It will be observed that most of the industries are located in a belt about 250 miles long and fifty miles wide stretching from Oshawa and Niagara Falls in the east to Sarnia and Windsor in the west.

First on the list is the motor vehicle industry, which has plants in Oshawa, Oakville, Brampton, Hamilton, and Windsor. In 1963 Ontario accounted for 97.1 per cent of Canadian net production, although this share will decline as a result of the opening of a new plant in Quebec. Closely linked to the motor vehicle industry is the motor vehicle parts and accessories industry, which ranks fourth and is centred in Windsor, Toronto, and St. Catharines. Another industry related to motor vehicles is the rubber industry, with plants in Kitchener and Toronto. The rubber industry ranks eleventh on the list.

Second and fifth on the list are two members of the primary metals group — iron and steel and smelting and refining. The Ontario iron and steel industry is concentrated in the two cities of Hamilton and Sault Ste. Marie, which account for over 80 per cent of Canadian production. Smelting and refining, located close to the resources in northern Ontario, were discussed in section A. Pulp and paper, Ontario's third largest industry, was also discussed earlier, in connection with forest industries.

In seventh place is the industrial chemicals industry, the largest member of the fast-growing chemicals and chemical products group. Ontario accounted for over 60 per cent of Canadian production of industrial chemicals in 1963. The largest plants are located at Sarnia, Toronto, and Cornwall. Closely related to industrial chemicals is the soap and cleaning compounds industry, with plants at Toronto and Hamilton. In nineteenth position in 1963, Ontario's soap industry accounted for 87 per cent of Canadian output.

As the centre of manufacturing in Canada, Ontario has attracted a number of industries which produce the capital goods required

in other industries. The machinery and equipment industry, located principally in Toronto, London, and Kitchener, falls into this category. As Ontario's sixth largest industry in 1963, this industry produced two thirds of Canada's industrial machinery. The manufacture of electrical industrial equipment is another industry which has remained almost entirely in Ontario, with plants at Peterborough, Hamilton, and Toronto. It was Ontario's eighth-ranking manufacturing industry in 1963. A number of other manufacturers who produce goods required in other industries have also been located predominantly in Ontario. Like the motor vehicle parts producers, the metal stamping, pressing, and coating industry and the metal fabricating industry manufacture component parts which are used in other industries. In thirteenth and fourteenth positions, these industries accounted for 62.8 per cent and 71.2 per cent respectively of Canadian production in 1963. Their principal plants are all clustered in southern Ontario.

Ontario is the centre of printing and publishing in Canada. The province's printing and publishing industry, located chiefly in Toronto and in other large urban centres, accounted for almost one half of the net value of Canada's newspapers and periodicals. The industry ranks twelfth in Ontario. Commercial printing ranks ninth.

The tenth largest industry in Ontario, and an important producer of manufactured exports, is the communications equipment industry. Centred in the Toronto area, the Ontario industry produced almost 70 per cent of Canadian output in 1963.

About 75 per cent of Canadian production of major appliances (both electrical and non-electrical) is carried on in Ontario. This industry ranks twentieth in net value of production.

The remaining four industries reflect Ontario's position as the leading province in agriculture and as Canada's largest market. Fruit and vegetable canners and preservers, breweries, dairy factories, and food manufacturers all belong to the food and beverages group and together accounted for close to half of Canadian production in these areas.

Together, the twenty Ontario industries which have been examined accounted for one quarter of Canada's manufacturing output in 1963. And, although it is impossible to obtain a complete picture from such a brief survey, this group of industries does give some indication of the variety of manufacturing in the province.

CONSTRUCTION: It is easy to underestimate the importance of the construction industry for the Ontario economy, yet in terms of net

value of production it is almost as important as all of the primary industries combined. Thus in 1961, despite the fact that the construction industry was encountering a period of slow growth, net production was \$1,200 million compared with a total of \$1,410 million for all primary industries. Over 6 per cent—154,000 people—of Ontario's total labour force, or about 15 per cent of the labour force engaged in Ontario's primary and secondary industries, was engaged in construction in 1961, another indication of the industry's importance.

Perhaps one reason for the tendency to overlook construction is the fact that it is not confined to any one region in the province. The products of construction may be stationary, but the industry is highly mobile. In fact, Ontario's construction industry is distributed throughout the province, wherever there are centres of population or of economic activity. Highways, houses, power dams, factories, and canals are all products of this important industry.

Construction in the postwar period has increased sharply, as the trend line in Figure 19 indicates. From a net value of \$470 million in 1948, production rose unchecked to \$1,310 million in 1957. The explanation for this postwar growth lies in the unprecedented amount of new investment in all sectors of the economy, indicated in chapter 3. After 1957 a substantial decline set in, continuing to 1961. Production then began to climb, however, reaching \$1,450 million in 1964.

Ontario's share of construction in Canada tallies closely with its share of the country's population. In 1964 Ontario had 33 per cent of Canada's gross value of construction and 34 per cent of Canada's population.

Table 19 breaks construction down into building and engineering. This reflects special features in the Ontario economy. Ontario's

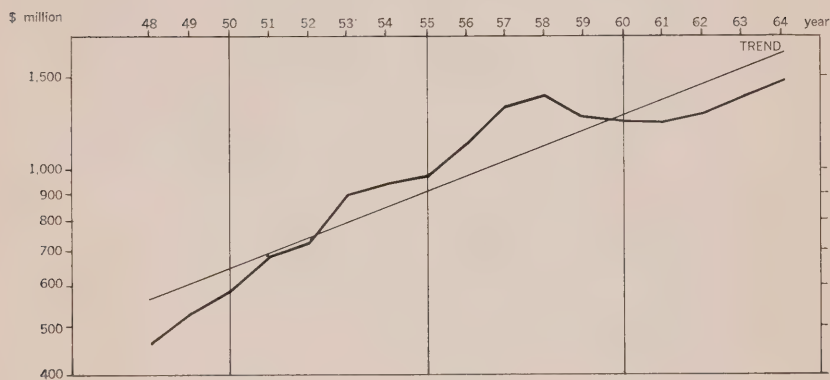
TABLE 19

CONSTRUCTION IN ONTARIO, 1964

	gross value, Ontario (\$ million)	Ontario as % of Canada
<i>building</i>		
new	1,530	37
repair	370	37
<i>engineering</i>		
new	700	24
repair	220	34
total	2,820	33

SOURCE: Canada, Dominion Bureau of Statistics, *Construction in Canada 1963-65*. (The figures are preliminary.)

FIGURE 19
NET VALUE OF PRODUCTION IN CONSTRUCTION, 1948-1964



SOURCE: Canada, Dominion Bureau of Statistics, *Construction in Canada 1963-65*. (1964 figures are preliminary.)

relatively high percentage of building construction in 1964 is in part a result of the province's predominance in manufacturing and commerce, and in part a consequence of higher standards of accommodation. In 1964, 37 per cent of both the new and the repair building in Canada was done in Ontario.

Also significant are the figures for engineering construction—a category which includes highways, canals, waterworks, dams, railways, and gas and oil facilities. Because of its large existing capital stock, Ontario's share of new engineering construction in Canada was a relatively low 24 per cent in 1964. But in repair construction for maintenance of this capital stock, Ontario's share was equal to its share of the population.

A review: At this point it is possible to review the relative significance of the various primary and secondary industries in the Ontario economy. Table 20 ranks these industries in order of their share of commodity production. It shows the percentage of employment and output in commodity-producing industries accounted for by each of the industries which have been considered. The most striking feature is the great importance of secondary industries, both manufacturing and construction.

TABLE 20
RELATIVE IMPORTANCE OF ONTARIO'S PRIMARY AND SECONDARY
INDUSTRIES, 1961

	% of labour force employed (approx.)	% of commodity production (approx.)
manufacturing	61	67
construction	15	15
agriculture	16	7
mining	4	5
electric power	2	4
forestry	2	1
fisheries	*	*
trapping	*	*

* Less than 0.5.

SOURCE: Canada, Dominion Bureau of Statistics, *Survey of Production 1962*.

C. Tertiary industries

Sections A and B of this chapter have dealt with the two different groups of industries which produce goods—either raw materials

or manufactured products. Now in this section the discussion turns to those industries which contribute the services that an advanced economy requires. It is important to realize that in the twentieth century the tertiary industries have grown more rapidly than either the primary or the secondary industries. As shown in chapter 3, in the discussion of human resources, over one half of the labour force—56 per cent in fact—is employed in the tertiary sector.

Because of its dynamic role in economic development, the transportation industry will be examined in considerable detail. Many of the other tertiary industries, however, play a more passive part, tending to grow as the rest of the economy expands. Accordingly, it will be sufficient simply to show the overall place of each of these service industries in the Ontario economy and to give some idea of recent growth.

TRANSPORTATION: Transportation is one of those basic services which link the other areas of economic activity. Even at the most elementary level, raw materials must be moved from their natural environment, either to the markets or to the place where they are to be processed. To give an example, iron ore, coal, and electricity are all brought together at Hamilton to make steel. After being processed, the products must be shipped to markets where they are either consumed or processed further.

For a region such as Ontario, where natural resources and ultimate markets are often separated by great distances, the transportation industry is an especially important part of the economy. Thus in 1961, 116,000 workers—5 per cent of Ontario's labour force—were in transportation.

As the following discussion will indicate, Ontario is well served by a vast network of transportation services. Developments in recent years have helped to keep down costs and have thereby enabled Ontario products to be marketed at competitive prices.

Water transportation: Despite the many innovations which have occurred in transportation, water transport remains the most economical method for shipping bulk cargoes over long distances. Thus the opening of the St. Lawrence Seaway in the spring of 1959 marked a major event in the development of transportation in the province. The Seaway has had a twofold effect on water transport: not only has it permitted large ocean vessels to travel to Ontario's inland ports, but it has also enabled the large lake freighters to reach tidewater. Built to a minimum depth of 27 feet, the Seaway makes it possible for these ships to travel back and forth along

the 1,219 mile route from Montreal on the St. Lawrence River to Port Arthur and Fort William at the head of the Great Lakes.

The effect of the Seaway on the amount of foreign trade handled at Ontario ports has been striking. During 1964, 32.9 million tons of cargo were handled. This level was 47 per cent higher than the corresponding figure for 1958, the year before the Seaway was opened. Coastal trade between Canadian ports also increased over the same period, reaching a total of 34.9 million tons in 1964—10 per cent more than in 1958. The bar chart in Figure 19 shows that the amount of cargo handled in both 1963 and 1964 was greater than in 1953 and 1958.

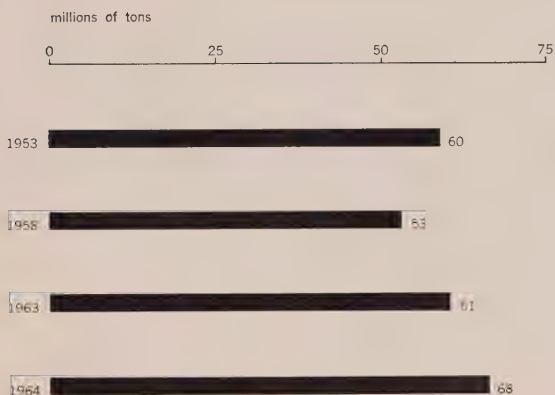
Ontario's seven leading ports in 1964 are listed in order of rank in Table 21. By far the largest volume of cargo was handled at the Lakehead ports of Fort William and Port Arthur, which are a trans-shipment point for western grain bound for world markets. The two steel cities, Hamilton and Sault Ste. Marie, were the second and third ports. Here the principal cargoes received were materials required in industry—coal, iron, and petroleum—while outward shipments consisted largely of iron and steel products. Fourth on the list was Toronto, which received large shipments of general cargo. Although Sarnia, the fifth largest port, now receives most of its crude oil by pipeline from western Canada, it continues to ship out refined petroleum and chemical products by water. The two cities remaining on the list are important trans-shipment points for grain and other commodities. Port Colborne is at the southern end of the Welland Canal, while Prescott is on the St. Lawrence River. These and numerous other Ontario ports gave this inland province 29 per cent of Canada's water cargo tonnage in 1964.

TABLE 21
ONTARIO'S LEADING PORTS, 1964

	cargo handled (millions of tons)
1. Port Arthur - Fort William	18.4
2. Hamilton	9.3
3. Sault Ste. Marie	5.7
4. Toronto	5.7
5. Sarnia	3.8
6. Port Colborne	3.5
7. Prescott	1.1

SOURCE: Canada, Dominion Bureau of Statistics, *Shipping Report 1964*, Parts II and III.

FIGURE 20
CARGO HANDLED AT ONTARIO PORTS, 1953, 1958, 1963, 1964



SOURCE: Canada, Dominion Bureau of Statistics, *Shipping Report; Shipping Statistics*.

Rail transportation: Over the last century railways have played a strategic role in the economic development of the province. They have been able to provide efficient transportation to areas not served by ship and have offered the advantage of faster service than can be provided by water transportation. By 1964 Ontario had almost one quarter of Canada's track mileage — over 10,000 miles of first main track. Most of this track belongs to the Canadian National Railways, owned by the federal government, and to the Canadian Pacific Railway, a joint stock company. The Ontario government owns and operates the Ontario Northland Railway, a 472-mile line from North Bay to Moosonee on James Bay, with branch lines serving many communities in northern Ontario.

In recent years, the railways have been subject to increasingly strong competition from other transport services, with effects that are shown in Figure 21. In 1963 total freight carried by Canadian railways in Ontario was 2 per cent below the 1958 level and 12 per cent below the level of a decade before.

Recently, however, Canadian railways have been making a concerted effort to maintain their competitive position relative to other transportation services. Automated hump yards have been constructed to speed up the handling of freight cars and thereby reduce costs. New tri-level automobile freight cars and the "piggy-back" service for carrying loaded truck trailers are two further examples of the railways' attempts to modernize. The success of these measures can be seen in Figure 21. In 1964 the freight carried by Canadian railways in Ontario rose above the 65 million ton level for the first time since 1953.

Although the outlook for railway freight transport thus remains bright, the same is not necessarily true for passenger services. No statistics are available on a provincial basis, but the figures for Canada as a whole indicate that the railways have suffered a great deal from competition with automobiles and airlines. The number of passenger-miles recorded by Canadian railways in 1964 was 16 per cent below the level of five years earlier.

Road transportation: The main competition for the railways in Ontario has come from road transportation, which is expanding rapidly. Over the decade from 1954 to 1964 the number of private and commercial motor vehicles registered in the province increased by over 60 per cent. With 2.4 million motor vehicles in 1964, Ontario had 37 per cent of the total number registered in Canada.

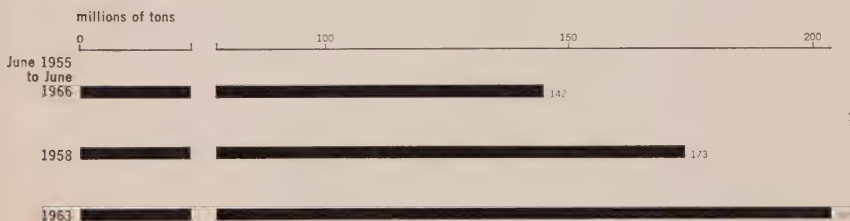
This growth in the number of vehicles on the road has been made possible by the continued improvement of the province's roads and

FIGURE 21
FREIGHT CARRIED BY CANADIAN RAILWAYS IN ONTARIO, 1953, 1958, 1963, 1964



SOURCE: Canada, Dominion Bureau of Statistics, *Railway Freight Traffic*.

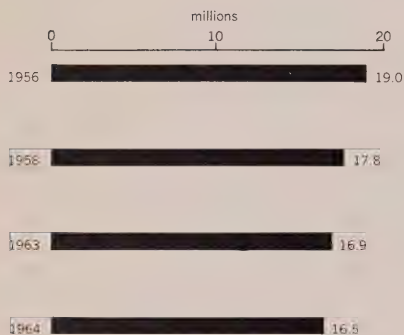
FIGURE 22
GOODS CARRIED BY TRUCKS REGISTERED IN ONTARIO, 1955-56, 1958, 1963



Note: The break indicates a change of classification.

SOURCE: Canada, Dominion Bureau of Statistics, *Motor Transport Traffic, Province of Ontario*.

FIGURE 23
PASSENGERS TRAVELLING BY BUS IN ONTARIO, 1956, 1958, 1963, 1964



¹Excludes urban transit.

SOURCE: Canada, Dominion Bureau of Statistics, *Passenger Bus Statistics*.

highways. By 1963 Ontario had almost 22,000 miles of paved road. One of the highlights of this development has been the construction of a controlled-access, divided expressway stretching from the Quebec boundary to Windsor on the American border. When completed, the MacDonald-Cartier Freeway will provide 560 miles of toll-free highway connecting Ontario's leading urban centres.

The development of highways has been a major factor in the growth of trucking in the last two decades. Because the service offered can be more flexible than other forms of transport, trucking firms have been able to compete very successfully with water and rail transportation, even over relatively long distances. As Figure 22 indicates, tonnage carried climbed from 142 million tons in the twelve months between June 1955 and June 1956 to 207 million tons in 1963—an increase of 46 per cent.

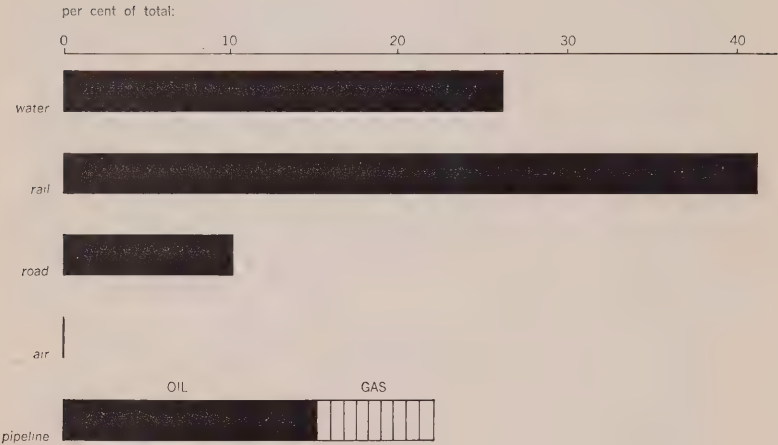
In passenger service, commercial road transportation has been affected by the same developments as rail transportation. Owing to the greater use of airlines and private automobiles, the number of bus passengers in Ontario dropped from 19.0 million in 1956 to 16.5 million in 1964. This 1964 level, shown in Figure 23, was 13 per cent below that of 1956.

Air transportation: One of the most outstanding trends in transportation in the last two decades has been the tremendous growth in air transportation. Indeed, this growth has been one of the main causes of the decline, noted above, in rail and bus passenger service. Over medium and long distances, air transportation is much faster than any competing method.

There are two major airlines in Canada: Air Canada, owned by the federal government; and Canadian Pacific Air Lines, a subsidiary of the Canadian Pacific Railway. Ontario is also served by several major foreign carriers, as well as by smaller companies which offer non-scheduled flight service. The expansion of air transportation has made a corresponding expansion of other facilities necessary. This has resulted in an airport-building program across the country, highlighted in Ontario by the completion of the new Toronto International Airport.

Although no provincial air transport statistics are available, the Canadian figures indicate the growth that has occurred. In 1963, Canadian air carriers recorded 3.6 billion passenger-miles—an increase of 71 per cent over the 1958 level. And, despite the fact that the actual tonnage carried remained small, there was an increase of 126 per cent in the number of ton-miles recorded from 1958 to 1963.

FIGURE 24
COMPARISON OF TRANSPORTATION SERVICES, INTER-CITY TON MILES,
CANADA, 1962



SOURCE: Canada, Dominion Bureau of Statistics, *Canada Year Book 1964*, Chapter XIX.

Pipeline transportation: Because pipelines provide an uninterrupted flow with a minimum of handling they offer the most economical method for transporting oil and natural gas. The last two decades have seen the completion of two major pipeline systems linking producing fields in western Canada with markets in Ontario.

The first of these systems is the oil pipeline of the Interprovincial Pipe Line Company, which was completed from Alberta to Sarnia in 1953. Since then, this 1,930 mile line has been transporting crude oil to Ontario refineries in ever-increasing amounts. In 1963, Ontario received 96.4 million barrels of western crude oil by pipeline—more than double the 43.3 million barrels of 1958.

The second system is the gas line of Trans-Canada Pipe Lines Limited, which runs some 2,300 miles from Alberta to eastern Canada. Since its completion in the fall of 1958 this line has been supplying most of the natural gas used in Ontario. In 1963 Ontario received 120.7 billion cubic feet of natural gas from Alberta, compared with only 60.0 billion cubic feet in 1959, the first full year of operation. In order to meet steadily increasing demand, a second gas pipeline is now being planned. When completed, this line will run from Emerson, Manitoba, by way of the United States, to Sarnia, Ontario.

A comparison: It is difficult to compare the different transportation services using the figures which have been given above. What is required is a unit such as the ton-mile which will give an idea of both the weight of the cargo and the distance it was carried. Figure 24 uses this measure to indicate the percentage of total inter-city ton-miles accounted for by each of the transportation services in 1962. Although the chart applies to Canada as a whole, it probably gives the correct ranking for Ontario as well. It will be seen that rail transportation ranked first, followed by water, pipeline, road, and air transportation, in that order.

STORAGE, UTILITIES, AND COMMUNICATIONS: For purposes of analysis, transportation may be grouped with three other industries, each of which provides services that help to link the rest of the economy. Two of them are parts of the economy's distribution system. The storage industry—grain elevators and warehouses—is obviously closely linked with transportation, its main function being to handle goods while they are between periods of transit. Utilities—electric power, gas, and water—are primarily involved in the distribution of power and water to industrial, commercial, and residential users. The third, the communications industry,

deals with the transfer of information and consists of telephone and telegraph systems, radio and television broadcasting, and the postal system.

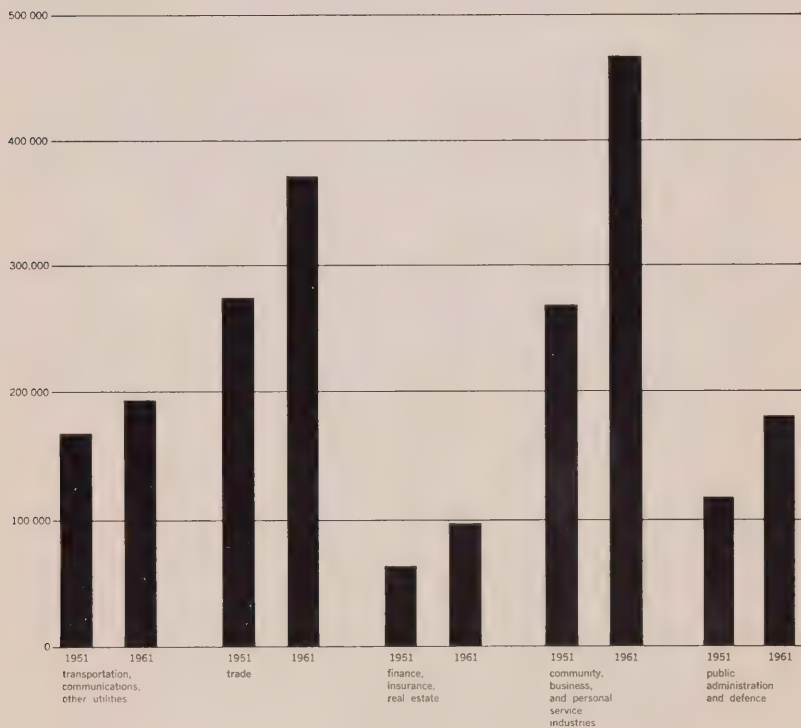
The first two bars in Figure 25 show the growth from 1951 to 1961 in transportation and these three related industries. Because of rising productivity, they needed an increase of only 16 per cent in their labour force—from 168,000 to 195,000—to keep pace with the needs of the economy.

TRADE: Wholesale and retail trade are also components of the system for distributing the goods which the economy produces. Chapter 2 of this booklet outlined the patterns of trade for Ontario's products. It should be realized that the trade sector itself employs a large percentage of Ontario's workers. In 1961 wholesale and retail trade accounted for 371,000 persons—16 per cent of the labour force. The 36 per cent increase in the number of people employed in trade of one kind or another from 1951 to 1961 is indicative of the growth which has occurred in this sector.

FINANCE, INSURANCE, AND REAL ESTATE: The financial sector of the economy plays an active role in the transfer of resources to their most productive uses. Obviously, as Canada's leading producing region, Ontario is also the scene of much of the nation's financial activity. Toronto, the chief metropolis of the province, vies with Montreal for the title of financial capital of Canada. Canada's principal stock exchange and the headquarters of a number of Canada's largest chartered banks, trust companies, and insurance companies are located in Toronto. It is not surprising, then, to see that Ontario employed 43 per cent of the total number of Canadians engaged in finance, insurance, and real estate activities in 1961. This sector has grown rapidly in recent years: the labour force involved in Ontario in 1961 was 98,000, 60 per cent more than in 1951, as Figure 25 reveals.

COMMUNITY, BUSINESS, AND PERSONAL SERVICES: The most dramatic growth in tertiary industries has been in community, business, and personal services. These include health and education, welfare services, personal services, religious organizations, services to business management, and a host of others. The fourth set of bars in Figure 25 indicates the striking growth which occurred in community, business, and personal services in Ontario from 1951 to 1961. The labour force increased by 75 per cent, reaching 467,000

FIGURE 25
ONTARIO'S LABOUR FORCE IN TERTIARY INDUSTRIES, 1951 AND 1961



SOURCE: Province of Ontario, Department of Economics and Development, *Ontario Statistical Review for 1965*.

in 1961. By that year this sector accounted for one out of every five Ontario workers.

The most important of these services for the long-run growth of the Ontario economy, and for Canada as a whole, is education. Education determines the quality of one of an economy's three factors of production—its human resources. In order to expand, an economy must have a highly skilled and well-educated labour force. Thus education is a form of investment in human resources. Its importance for economic growth will be briefly considered in chapter 5.

PUBLIC ADMINISTRATION AND DEFENCE: The public administration and defence sector has also expanded extremely rapidly in the last two decades. By 1961 there were 181,000 persons—8 per cent of Ontario's labour force—in this sector, as Figure 25 shows.

5/The potential for growth: prospects and problems

The earlier chapters of this booklet have placed in perspective the demand for Ontario's products, its natural, human, and capital resources, and its sectors of production. However, an examination of the economy of the province is scarcely complete without at least a brief glimpse into its potential for growth and a glance at some of the problems that accompany the growth process.

DEMAND FOR ONTARIO'S PRODUCTS: As was pointed out in chapter 2, the success of Ontario's products in international, national, and provincial markets has been a driving force behind the province's economic growth. But experience indicates that it cannot be complacently assumed that the successes of the past will continue into the future. Sudden shifts in demand can destroy whole industries and force many people to look for new jobs. Witness the problems faced by the people of Elliot Lake when American demand for uranium dried up in the early 1960's.

International demand for Ontario's products is most difficult to predict, since it is determined primarily by factors external to the economy of the province. One recent development that is proving to be of great significance is the Canada-United States Automobile Free Trade Agreement. This is an important example of how the federal government, through its powers to negotiate commercial agreements with other countries, can directly influence a provincial economy. Under the terms of the Agreement, Canadian motor vehicles are permitted duty-free entry into the United States. In exchange, Canada removed its duty on imported motor vehicles and parts used in their manufacture.

Early indications of the success of the Agreement, which went into effect on January 18, 1965, are found in production and trade statistics. Canadian vehicle production rose by 27 per cent in 1965, to 756,000 units, while car and truck exports almost doubled—to 96,000 units, or one eighth of the total domestic production. By the end of the year, Canada was exporting one car for each car imported from the United States.

Trade agreements of this nature are especially important to a manufacturing province such as Ontario. In 1965 about 97 per cent of all Canadian automobiles were produced in this province, and most shipments of automobiles and trucks to the rest of Canada originated here. Moreover, it is estimated that, in 1965 alone, the Free Trade Agreement led to 13,000 new jobs and an increase of about \$150 million in investment in Ontario. In fact, it is expected that 41 new automobile and auto parts plants will be located in Ontario, and 115 plant expansions will take place, as a direct result of the Free Trade Agreement.

Other indications of the impact of the Agreement on the Ontario economy are to be found in the increased investment activity and new hirings in related industries. While automobile and parts manufacturers expanded production facilities in many Ontario communities, especially in the Toronto, Kitchener, London, and Windsor areas, it is also worthwhile to note that the iron and steel, rubber, glass, and electronics industries in Ontario enjoyed increased demand for their products in the automotive field and expanded their facilities in communities such as Hamilton, Toronto, Sarnia, Chatham, and Midland.

Freer trade with the United States is a concept that could be applied to many Canadian industries. One must be wary, however, about making blanket statements on this subject without first thoroughly investigating each industry in the economy. There is a long history of high protective tariffs in this country and much resistance to their removal. But in the light of recent trends it seems likely that the question of international free trade and its effects on our economy will become more, rather than less, important in the near future.

While it appears that the prospects for future trade with the United States are bright, the situation is by no means clear with respect to Europe. Since its formation in 1958, the European Common Market has been gradually lowering internal tariffs and raising the external tariff. If Britain joins the Common Market, which already includes France, Germany, Italy, Belgium, Luxembourg, and the Netherlands, Canada may be forced to pay higher duties on its chief exports to Britain, and may experience difficulties in selling its products on the European continent.

International factors also help to determine demand for Ontario's products in the rest of Canada. For example, when farmers in the prairie provinces sell their wheat abroad they are able to purchase automobiles, agricultural implements, and other manufactured products from Ontario. Thus, the province's economic growth is

intimately related to economic growth and conditions in the other provinces. Crop failures in western Canada, or loss of the export market, or a host of other factors could have a retarding effect on Ontario's prosperity.

Finally, Ontario itself will probably continue to be Canada's major market area. As long as the province experiences growing population and rising personal incomes, there will be increasing demand within the province for its own products as well as for the products of other provinces. If external factors in the international and national market areas remain favorable, Ontario will continue to enjoy a better than average measure of growth and prosperity.

RESOURCES AND PRODUCTIVITY: It should be clear from the discussion in chapter 3 that the resources an economy has at its disposal are not static. At any one point in time, the objective of the economy should be to integrate these resources—natural, human, and capital—so that the maximum output of marketable goods and services is achieved at minimum cost. The key to this goal is mobility, such that each resource will find its most productive use in the economy. Over time, this objective must be modified to allow for increases in the maximum level of output. Thus, in addition to high mobility of resources, there must be continued growth in the productivity of each resource.

Natural resources are not to be considered as given amounts of lumber, silver, gold, and so on. Instead they should be thought of as resources whose economic value is dependent upon the level of technology and the state of human wants. Ontario's stock of such resources changes in value with each new innovation in agriculture, forestry, or mining. But this does not necessarily mean that the value of these resources increases as changes are introduced. Another country, or another province, may discover a cheap substitute for nickel, and Sudbury may suddenly become another Elliot Lake.

The private companies engaged in the resource industries recognize this economic fact of existence, and much basic research is constantly being carried out by these concerns so that they may remain competitive in world and national markets. Governments, too, recognize it. The federal government offers generous tax incentives to companies that engage in research and development. Furthermore, the Ontario government has recently set up an advanced \$100 million scientific centre, Sheridan Park, near Toronto, devoted solely to the vital role of industrial research. By 1970 it will employ 6,000 scientists and technicians.

Care must be taken to ensure that Ontario's natural resources are exploited with a concern for the long-term needs of the economy. Here the Ontario government exerts a positive influence on the economic well-being of future citizens of the province. Special laws, rules, and regulations, originated and administered by the provincial authorities, prevent the indiscriminate and wasteful exploitation of Ontario's wealth in lakes, forests, fields, and mines.

Like natural resources, *human resources* should be thought of as a dynamic, rather than static, factor of production. The labour force is constantly being affected by changes in the size and structure of the population and by changing industrial requirements, such as the introduction of automated machinery.

One of the main problems in the Ontario economy today, and one that is likely to remain a problem for some time to come, is the shortage of skilled labour. This is not merely a matter of numbers; indeed increased numbers of people are expected to be entering the labour force in the next few years. Rather, it is a problem of training and education. Skills quickly become obsolete in a dynamic economy, as new and better ways are found to perform old jobs. Adaptability of the labour force is one of the keys to success in a growing economy.

This situation is generally recognized and, to meet the problem, the government recently expanded its vocational centres and programs for worker retraining and education. In addition, it set up plans to establish new institutes of technology and to set up, in co-operation with the business community, on-the-job worker training programs. Finally, the government has agencies in many other countries which promote immigration to Ontario of skilled workers. Recently, the Ontario House in London, England, had over 800 enquiries in one week from prospective immigrants to this province.

In Ontario's primary and secondary industries, as noted in chapter 4, a rising level of output has not resulted in a proportionate increase in the labour force. Rather, the productivity of each worker has been improved by increasing the amount and quality of the capital equipment he uses and by upgrading his occupational skills. It is likely that, as productivity continues to rise, some industries, particularly among primary producers, will experience only moderate increases and some will even experience decreases in their labour requirements. However, a growing demand for sophisticated machinery will insure expanding employment opportunities in secondary industries.

As population and incomes rise and the province's economic life becomes more complex, tertiary "industries" such as education, health services, and public administration will continue to expand. Much of any future increase in Ontario's labour force, therefore, is likely to be absorbed by this already rapidly growing sector. But the labour demand will be for people with at least a secondary education and, even more, for people with post-secondary education.

In 1963 there were 44,191 full-time students enrolled in Ontario's universities and colleges, an increase of about 130 per cent over the 1953 enrollment. This startling increase has necessitated a rapid expansion of existing universities and the opening of many new ones. In addition, a program of community colleges is under way in the province. These colleges will enable students taking the four-year high school course to continue their education beyond the secondary level. Finally, night courses and extension courses at universities and technical schools are enabling many adults to upgrade their education and so keep pace with a changing economy.

The third factor of production noted in chapter 3 and briefly mentioned above, *capital*, is even more subject to change than either natural resources or the labour force. To support rapid economic growth, a country such as Canada needs sophisticated and up-to-date production facilities. As long as capital stocks and technical knowledge are low, labour productivity, income, and savings will be low. Actually, to finance such a rapid expansion of physical plant and equipment as has occurred in this country, Canadians have borrowed money heavily from foreign sources, and in many cases non-residents own and control large Canadian industries. In 1961 the non-residents' share was 54 per cent in manufacturing, 62 per cent in mining and smelting, and 60 per cent in the petroleum and natural gas industry. But, without the use of foreign funds to build Canadian industry, it is doubtful indeed that Canadians would have experienced the high level of economic prosperity and growth that has occurred since the Second World War.

Economic growth, however, is not the panacea for all of Ontario's economic problems. Despite the fact of rapid economic growth, there is still a hard core of poverty which is unrelieved by the general advance. Part of this is in the cities, part in the countryside. Many people are caught outside the mainstream of Ontario's economic life. Often they are individuals and families who are physically or mentally unable to adjust to the demands and disciplines of a highly organized economy. Their problems are acute and, in the absence of special action, are likely to become more so in the future, as the pace quickens.

Finally, it is not possible to specify the exact path of future economic growth in Ontario. As noted at several points in this booklet, there are numerous factors, such as demand for exports, which are determined largely beyond the borders of the province. Resources are not completely mobile, and productivity gains are often hard to come by. Yet, despite these uncertainties, the performance of the Ontario economy in the two decades since 1945 provides considerable grounds for optimism.

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Dominion Bureau of Statistics publications may be obtained by writing to the Bureau in Ottawa. Most public libraries contain D.B.S. material. In Toronto D.B.S. publications are available in the Business Reference Section of the City Hall Branch of the Toronto Public Library. Federal and provincial government publications may be obtained by writing directly to the department concerned. Most Ontario Department of Economics and Development publications may be obtained by writing to Information Services, Department of Economics and Development, 950 Yonge St., Toronto, Ontario.

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